

# NETWORK

THE RAILWAYS OF AUSTRALIA QUARTERLY



**Newlook XPT (above) smartens up country services**

**Tourist luxury on The Ghan gains top award**

**Thirty new locomotives for freight trade**

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# NETWORK

THE RAILWAYS OF AUSTRALIA QUARTERLY

Volume 28, Number 1  
January, February, March 1991

9101



COVER: The new-look XPT, its modern logo representing the all-encompassing presence of NSW State Rail's Countrylink service from the western plains of the State, through the Blue Mountains and to the sea. Country services are to have a new design in passenger comfort with ergonomic seating, special headrests, adjustable air-conditioning, walk-through cafeteria-style buffets, and a wider choice of meals, including a trolley service to deluxe seats.

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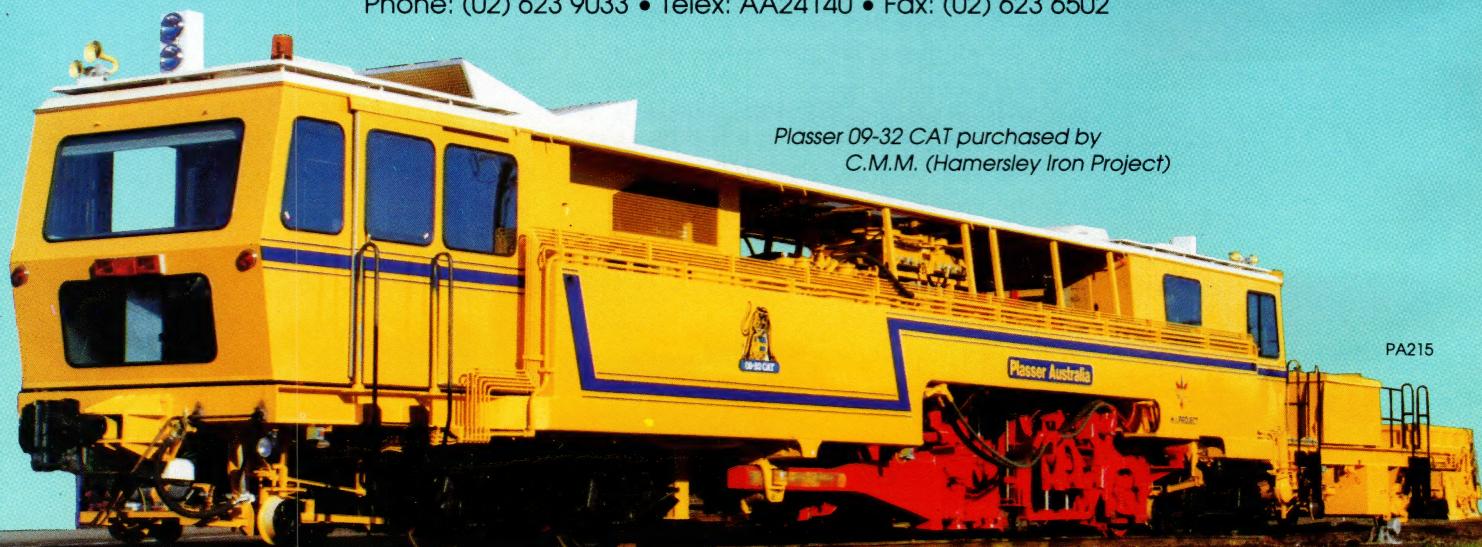
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# NETWORK

THE RAILWAYS OF AUSTRALIA QUARTERLY

## THE EXECUTIVE DIRECTOR'S COLUMN

**A**s I write these notes at the end of 1990, my thoughts turn to Australia's passenger services, the most publicly visible part of our rail network. Two aspects come to mind.

The first is the Tourism Award given to the 'Ghan' passenger train, operated by Australian National between Adelaide and Alice Springs. If you have been fortunate enough to have ridden this train, you will know that the award was well merited. The train has been imaginatively refurbished and presents a fine image to its passengers. Menus in the dining car have been upgraded to match, and special attention is being paid to service quality. The train now attracts high patronage, and shows what can be done when our Government owners are prepared to spend a little money on rollingstock renewals, and in subsidising the cost of the service as a Community Service Obligation. This aspect is critically important — none of our passenger services cover their operating costs.

A similar refurbishment has been undertaken on the Queenslander, linking Brisbane with Cairns. The amenities offered to travellers differ between the two trains, but there is evidence of the same attention to detail on the Queensland service. A train manager is in overall charge, and staff have been specially trained in their duties of caring for passengers. The dining car menus have been upgraded additionally.

The second major "passenger" event coincided with the 1990 Annual Conference of Railway Commissioners. In Sydney, at that time, the Chief Executives of Australia's rail Systems gave authority to

Railways of Australia (Services) Pty Ltd to conclude contracts for the provision of a National Rail Passenger Reservation System. To be known as 'TRAIN'S' (The Train Reservation Accounting and Information Network System), the new facilities will offer vastly improved services to customers of Australian rail passenger service.

Network will report elsewhere the details of the System — its basic British Rail software, modified by a Qantas subsidiary to suit Australian conditions. But passengers will feel the benefit when they telephone or call in to book a rail ticket, and management will receive much more detailed information much more quickly.

The agreement by all rail Systems, and their owning Governments, to participate in one Australia-wide reservation network demonstrates a commitment to the ongoing need to provide our communities with an efficient transport system.

It seems that we still have some distance to go in educating Australia about our passenger trains. Recently, on a taxi journey in Sydney, I was asked by the driver whether we still had to change trains at Albury! Almost 30 years after the necessity to do that was removed, the memory lingers on!



M.C.G. SCHRADER

# NETWORK

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## TRACKS

# Creating a

AUSTRALIANS LOVE TO ESCAPE THE CITIES. FRESH AIR AND THE PEACE AND QUIET OF THE COUNTRYSIDE ATTRACT HUNDREDS OF THOUSANDS OF CITY WORKERS EVERY LONG WEEKEND. OLDER PEOPLE ARE FINDING RESPITE THERE ON SHORT AND LONGER VISITS THROUGHOUT THE YEAR. COUNTRYLINK IN NEW SOUTH WALES HAS SHOWN THE WAY FOR RAIL SERVICES WITH A REVOLUTIONARY APPROACH TO GETTING AWAY FROM IT ALL.

**O**pening up the country areas of New South Wales with XPT trains, express passenger coach links, establishment of modern integrated travel centres, and introduction of a new airline-style reservation system, is planned as a major contribution to tourist development.

The Countrylink program involves an outlay of \$120 million. \$40 million of this will be spent on new XPT trains, \$50 million on new Xplorer trains, and \$30 million on providing comfortable rail/coach interchanges and travel centres.

"This represents a commitment to support an integrated passenger transport service to country NSW during the next decade," says Countrylink general manager, Faye Powell. It means much higher levels of passenger comfort and service.

"Initiatives already in place will provide specially-trained staff on the XPTs and Xplorer trains, complete refurbishing of trains inside and out, vastly improved catering, and airline-style comfort."

Countrylink's current fleet of XPTs is to undergo substantial

upgrading. Specifications have been finalised for a new standard of passenger comfort. The carriages will feature ergonomically designed seating, with specially designed headrests. Air-conditioning will be adjusted for climatic conditions and day or night journeys.

Buffets will be completely redesigned to allow a walk-through cafeteria-style arrangement, with a wider choice of meals available, and there will be full airline trolley service to deluxe seats.

### A new Corporate image

Outside, the XPT will be repainted to reflect Countrylink's new corporate image. The new logo represents the all-encompassing presence of Countrylink — from the Western Plains of NSW, through the Blue Mountains and to the sea.

A new generation of trains, the Xplorers, will service shorter intrastate routes. The \$50 million Xplorers will connect Tamworth, Armidale and Moree. These trains are the first of their type in Australia. With their ability to split up, they will travel to Werris Creek in the North West, where

three carriages will continue on to Tamworth and Armidale, while two cars will travel north to Moree and Gunnedah.

The establishment of Countrylink Travel Centres throughout NSW is one of the major elements of a three-year, \$26 million plan to enhance passenger services. The centres represent a new era within the travel industry. Forty two of them will be built — 26 in the Sydney metropolitan area, with a further 16 throughout rural NSW.

The centres provide bookings for rail, coach, domestic air travel, accommodation, car rental, travel insurance, South Pacific cruises, package holidays and personalised itineraries. Those already opened are proving extremely popular. New centres are opening at the rate of one every six weeks.

Countrylink passengers will change from XPT and Xplorer to XPC (Xpress Passenger Coaches) at terminals designed for comfortable passenger transfer. All interchanges will be "passenger friendly" with covered walkways, air-conditioned waiting rooms, ramps and toilets for those with special needs and a mothers' room.



# newlook Countrylink

*Countrylink travel centres (left) will be given a new image and offer a higher level of customer service. Railway stations, like Cootamundra (below), will be returned to their former grandeur under a \$26 million program.*



Many of the interchanges will become the focal point for tourism, because private coach operators will also use the facilities. Countrylink is working hand-in-hand with many regional communities in providing first-class travel facilities.

The new airline-style reservation system, Train Reservation Accounting Information Network System, (TRAINS) will revolutionise booking and ticketing procedures at these centres, (For more on this see Page 47).

## The passenger-staff interface

Countrylink is leading the way with a staff multi-skilling project for on-board services, catering and conducting. More than 140 on-train staff have been trained at the Petersham Training College. The training is designed to create new-look on-train staff who are known as Passenger Attendants.

The creation of Passenger Attendants has seen the abolition of 11 different staff classifications. There are now only three. This provides a better career path and promotional opportunities.

Countrylink Travel Centre staff are being trained to AFTA (Australian Federation of Travel Agents) standards to provide service levels rivalling private sector agents.

In the completely deregulated and competitive market in which Countrylink performs, its future depends on offering a service competitive in price, comfort and quality. The Countrylink business strategy is to improve financial performance through improvements in service levels, and patronage. At the same time, operating costs must be lowered through investment in new technology, improved fleet use and rationalisation of facilities.

The key link in this program is the introduction of an all XPT fleet for long-haul routes.

Xplorer trains will service shorter intrastate routes where load factors can vary and flexibility is an important factor.

This means a substantial improvement in the cost recovery levels. At the time of the Booz-Allen and Hamilton report, Countrylink was recovering only 30 cents in the dollar. Strategies put into place

over the last 12 months are the first step in a program to lift the operating cost recovery ratio to 70 cents in the dollar.

In 1989/90, the first year of Countrylink's turnaround program, key achievements included:

- XPTs introduced to Brisbane and Murwillumbah
- Use of XPT fleet increased by 100 per cent
- Labour productivity up 30 per cent
- Countrylink coaches contracted to the private sector with a 30 per cent saving.

The establishment of modern travel centres, many in country areas, and introduction of a greatly enhanced Countrylink service at all levels of operation will set the pace for country rail/coach travel in Australia and encourage visitors from other States and overseas to see and experience the lifestyle of country communities.

For country people themselves the upgraded operation will mean faster, easier and more satisfying rail/coach services designed to meet their expectations of standards of service and accommodation. □



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# THE GHAN



The train  
The legend  
The winner

Australia's famous desert train operating between Adelaide and Alice Springs, The Ghan, has won the Australian Tourist Industry Association's award for the best tourist transportation service. The award acknowledges the world-class excellence of the train and its staff.

The Ghan is an Australian legend, a part of history and a part of culture, attracting both world fame and world acclaim, inspiring the imagination of travellers the world over.

Riding The Ghan has always been one of the world's great train journeys.

The ATIA award has brought Australian National Railways many accolades including this praise from Federal Land Transport Minister, Bob Brown: "The train provides a style and standard of comfort never seen before in Australia. Australian National has shown that tourists can be won back to rail by creative decision-making and hard work."

Painted in the distinctive sunset red and yellow livery of the Northern Territory, The Ghan's eight first class sleeping cars, two lounge cars and a dining car are resplendently furnished in Art Deco style.

"We are very excited about the award — it tends to reflect the views of our passengers," Australian National's managing director, Russell King, says. "It recognises the investment which the government, through Australian National, has put into the tourist industry."

The journey from Adelaide to the prettily-named Alice Springs in the still-mystic centre of Australia takes 22 hours and covers 1,555 kilometres. The train has 144 first class sleeping berths and in addition can accommodate 176 sitting passengers. It is hauled by diesel electric locomotives.

## Luxurious facilities

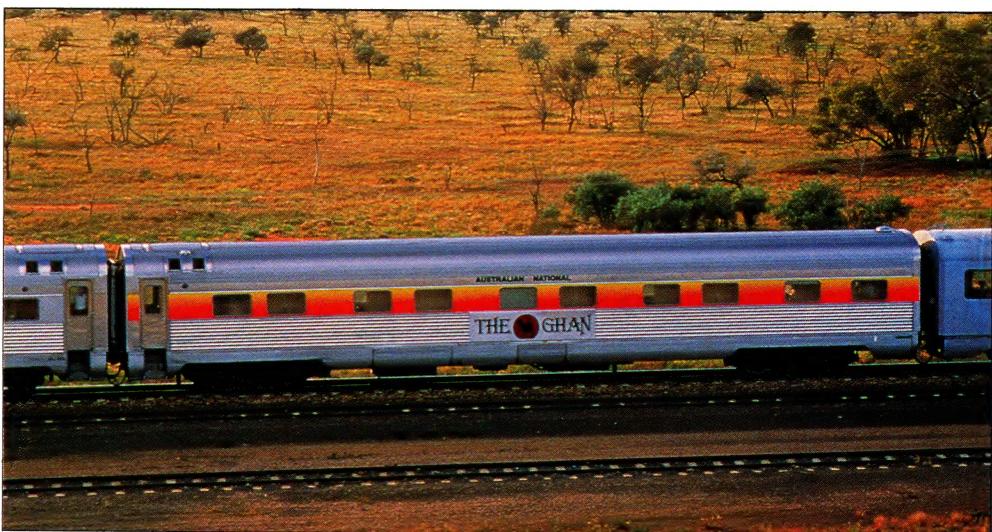
The Ghan is a fully air conditioned train with world class facilities. Twinette (double) and roomette (single) sleeping compartments, provided for all first class passengers, feature hot and cold showers, folding tables, reading lights, wardrobes, washbasins and toilet facilities. Twinettes each have their own showers, while roomettes have showers at the end of the carriages.



# TRACKS



*Top-class hotel service and menu in the Stuart Restaurant (left) followed by a good night's rest in a twinette sleeper, or a visit to the Oasis Bar. All this on-board quality lifestyle is to be enjoyed as The Ghan (right) speeds through the sparsely-treed deserts of central Australia.*



Luxuriously-appointed, the Oasis Bar and the Dreamtime Lounge provide full drink services in ample space for relaxation. Passengers can while away the hours in the Dreamtime Lounge with an electronic organ and video movies. This car is totally non-smoking.

The Entertainment Car features a hairdressing salon, videos, games and poker machines.

Superb three and four course meals are served in the Stuart Restaurant to all sleeping car passengers.

Coach class passengers have the choice of spacious sitting coaches with reclining seats with showers and toilets in each carriage. A cafeteria/lounge car for economy class passengers supplies light refreshments.

Passengers have the convenience of a motoring holiday in their own car without the hassles of driving to their destination by taking advantage of Motorail. Special wagons are attached to the rear of The Ghan to carry passengers' motor vehicles, caravans or boats between Adelaide and Alice Springs.

The diversity of countryside enroute is captivating. From Adelaide, The Ghan passes through rolling farmlands to Port Pirie, from where it parallels the Flinders ranges to Port Augusta.

After crossing the head of Spencers Gulf, The Ghan traverses the Trans Australia Railway to Tarcoola and then heads north on the Central Australia Railway, passing through the MacDonnell Ranges shortly before reaching Alice Springs. Entering Alice Springs the train winds through Heavitree Gap, a narrow pass accommodating the road, the railway and the Todd River.

The latest initiatives to upgrade The Ghan began in 1987 and the first refurbished carriages started rolling out of the Port Augusta workshops in 1989. AN Passenger and Travel general manager Graeme Templer has expressed his appreciation to all the staff involved in the upgrade, promotion and operation of the train service.

"The success of The Ghan is a reflection of the effort put in by Port Augusta Workshop staff in upgrading the carriages, the on-train staff and, in fact everybody in AN Passenger and Travel," he said. "The Ghan's success shows that AN's marketing approach works."

AN's well-known conference car is available for hire on The Ghan, and has proved to be an excellent means of attracting extra passengers.

Future plans include the upgrading of the economy sit-up carriages with video entertainment and a servery area where on-train staff can prepare food for travellers, similar to in-flight services currently provided on aircraft.



AN is also examining the possibility of incorporating a vista dome car which features an upstairs windowed lounge area offering a 360 degree view of the passing scenery.

## A legacy from Afghan settlers

The first Ghan ran to Alice Springs in 1929 on a narrow gauge (1067mm) railway from Port Augusta via Quorn, Marree and Oodnadatta. The name was adopted unofficially for the fortnightly passenger train to Oodnadatta and is a legacy from the early Afghan settlers whose camel trains ferried passengers and freight northwards from Oodnadatta during the 40 years that the railhead stopped there.

Originally imported for the ill-fated Burke and Wills expedition, the camels helped build the railway which made them redundant with The Ghan's maiden journey.

The rugged desert terrain and termite damage to sleepers earned The Ghan a reputation for unreliability, with the journey taking anywhere from three days to one month. Flash flooding washed the track away, leaving passengers stranded amid an inland sea. On one occasion, the engine driver had to shoot goats to feed his hungry passengers.

The track in earlier years crossed the flood-prone Eyre Basin, with resultant difficulties and irregularity in operation of the line. On several occasions major bridges were swept away by floods which, although infrequent, are often severe in the region.

Originally passengers from Adelaide travelled to Terowie by broad gauge train, then by narrow

gauge train to Quorn where The Ghan commenced its journey.

In 1937 a shorter route via Port Pirie was opened, passengers travelling on broad gauge to Port Pirie, then standard gauge to Port Augusta where they joined the narrow gauge Ghan for the climb through the Pichi Richi Pass to Quorn, then following the original route northward through Marree and Oodnadatta.

The narrow gauge section between Port Augusta and Marree was replaced by a standard gauge line west of the Flinders Ranges in 1956, necessitating a change of gauge to The Ghan at Marree.

The final section of the original route, from Marree to Alice Springs, and the historic narrow gauge Ghan passed into history in November 1980 when a new standard gauge railway was opened to Alice Springs. The 831 kilometres of new line diverges north from the Trans-Australian railway at Tarcoola, following a completely new all-weather route approximately 150 kilometres west of the old line.

Thus from days and weeks, from uncertainties precipitated by wind and rain, from the rigours of heat and sand, the long journey by rail from Adelaide to Alice Springs was transformed to a smooth, air-conditioned comfortable 22-hour run with international standards of service and accommodation.

The heat-shimmering mirages, the pink salt lakes, the red-baked earth of the Simpson Desert, and the burning sandhills remain as reminders to all travellers of the challenges and hardships encountered by their exploring predecessors less than a century ago. □

# NEW Brisbane Tunnels

AND A FAST-LINK TO THE GOLD COAST

**F**our new city tunnels, duplication of track on the Beenleigh line, improved signalling, stations and passenger facilities updated (including new platforms), new electric rollingstock — and a rapid train link with the Gold Coast.

These are some of the improvements Brisbane commuters can expect as the 21st century speeds towards them like one of Queensland Railways' new 160km/h inter-city trains to be constructed for Gold Coast-Brisbane passenger traffic.

But that's a little way down the track. It is what is happening now, in early 1991, which will form the basis for sound, long-term passenger planning, including the Gold Coast railway.

The introduction of fast, efficient electric passenger train services in 1979, following the linking of Brisbane's southern and northern suburban rail networks, resulted in a dramatic increase in patronage — some 70 per cent in 10 years.

The peak, 49.4 million passenger trips, was achieved during Expo '88. After an expected decline, figures are again climbing towards that mark and will exceed it provided peak period demands can be met.

Currently, Citytrains are packed during peak hours and the suburban system is at capacity. More services cannot be introduced until the infamous city tunnel bottleneck is removed, and more trains are able to flow through the centre of Brisbane city.

## The tunnels

The solution is the construction of four new city tunnels — two between Brunswick Street and Central stations, and two between Central and Roma Street stations — which will increase existing capacity by 80 per cent.

Queensland Railways' inner-city quadruplication scheme provides for a total of four tracks to be available between Bowen Hills, Brunswick Street, Central and Roma Street stations and will increase capacity of the track system through the city corridor to approximately

45 services each way per hour, using currently available rail technology.

Work is well advanced on construction of the two new tunnel portals adjacent to the present tunnel portal at the Gotha Street end of the Central-Brunswick Street tunnel. This is being done in conjunction with the widening of the railway formation between the Brunswick Street tunnel portal and Bowen Hills.

The whole scheme including the new tunnels, station upgrading, trackwork and signalling, could be ready for commissioning by the end of 1995, or may be delayed until 1997, depending upon the availability of funds.

The Brunswick Street tunnel design has been completed by experienced tunnel consultants, Connell Wagner (Qld) Pty Ltd. Design for the Roma Street-Central tunnels is yet to be finalised. Tenders for construction of both sets of tunnels will be called in early and late 1991 respectively. It is estimated that cost of this quadruplication and tunnel construction will be \$135 million (December 1990 dollars).

## The Gold Coast connection

A fleet of new inter-city electric passenger trains to run between the Gold Coast and Brisbane will complete the pleasing picture for commuters. The track quadruplication through the city corridor will enable the trains to bring their passengers right into the heart of the city.

More importantly, duplication of track now underway between Kuraby and Beenleigh will ensure that a 67-minute service between Robina on the Gold Coast and Brisbane Central will be achievable, and allow increased suburban train schedules for "southsiders."

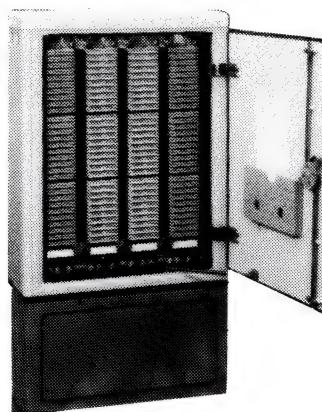
Work on the track duplication is well advanced, with bridges completed or near-completed. Station refurbishment includes new buildings at Holmview, new subways at Eden's Landing and platform straightening at Central. Track laying should commence early in 1991 and the new facilities are to be commissioned by December 1991. □

**BRIDGES, TOO, FORM PART OF THE HUGE RAIL CONSTRUCTION PROGRAM UNDERWAY IN QUEENSLAND. THIS NEW BRIDGEWORK, RISING MAJESTICALLY ABOVE THE LOGAN RIVER, WILL TAKE A SECOND TRACK BETWEEN KURABY AND BEENLEIGH. THE NEW TRACK WILL FACILITATE A 67-MINUTE SERVICE BETWEEN BRISBANE AND ROBINA ON THE GOLD COAST. FOUR NEW TUNNELS IN BRISBANE ITSELF WILL INCREASE CAPACITY OF THE METROPOLITAN SERVICE BY 80 PER CENT.**



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# Rail's fire-fighter follows the profile grinder



The rail fire fighting unit ready to douse any spot fires following grinding operations by a rail profiler.

A 20,000-litre rail mounted fire fighting vehicle, designed and made in Australia, is towed behind a rail profile grinding machine which gives the top surface of rails their characteristically smooth finish.

Friction generated by the grinding operation can cause spot fires along the tracks. Emco Wheaton, Australia, in conjunction with Fire Fighting Enterprises have designed and manufactured the fire-fighting unit for Australian National Railways.

The water tank, designed and manufactured in accordance with AS1692 and built using 5mm AS1204-250 grade mild steel plate, consists of dished and flanged ends, four transverse and two longitudinal baffles, ladders walkways and associated pipework.

The internal and external surfaces of the tank are abrasive blast cleaned to class 2 1/2.

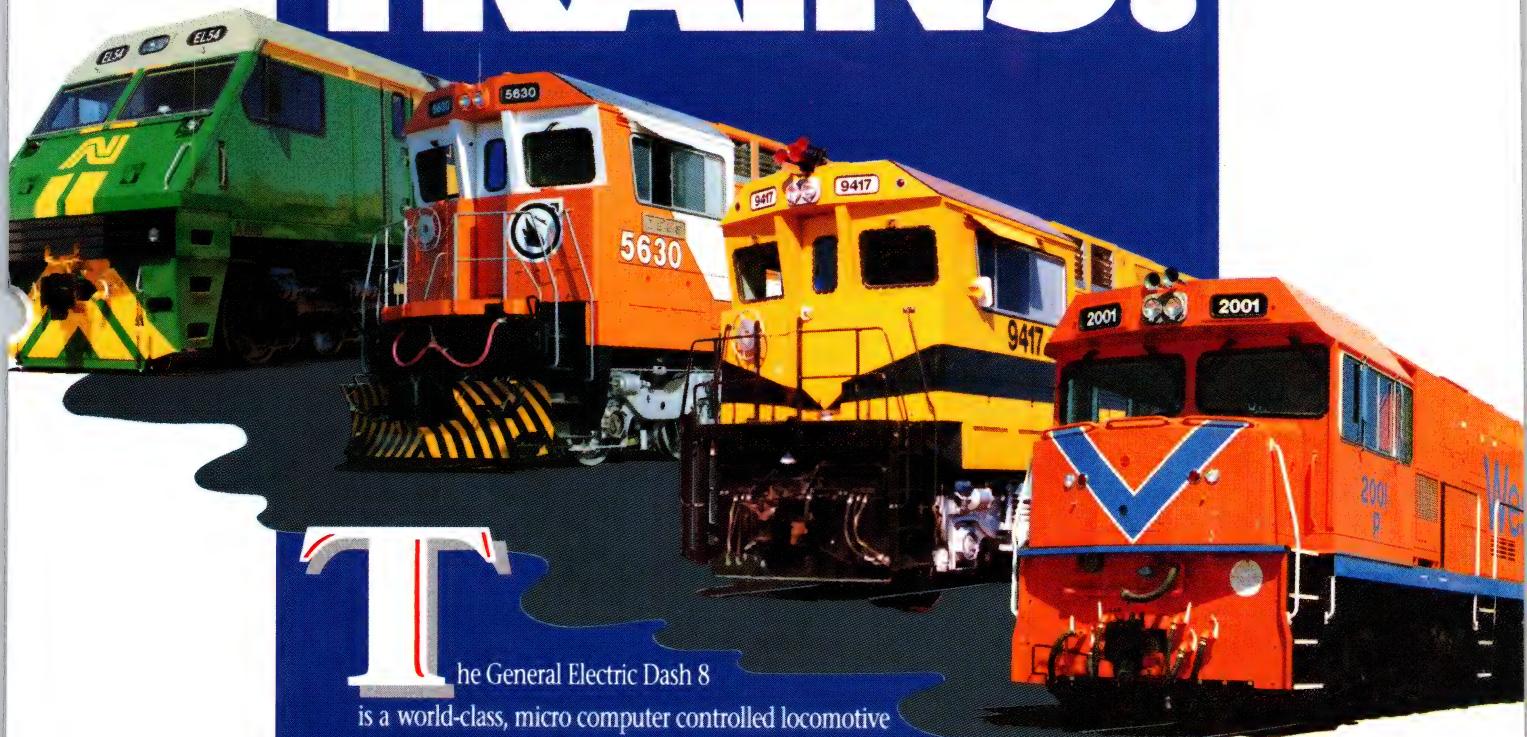
The internal surfaces of the tank have two coats of Taubmans tank lining and the external surface is finished with one coat

of Valchem epoxy zinc phosphate followed by one coat of Taubmans series 40 re-coatable urethane enamel.

The tank complete with hose reels, pumping equipment and associated pipework supplied by Fire Fighting Enterprises was mounted on a rail bogie by other contractors.

The fire-fighting unit and profiler are currently in use in remote areas of South Australia and it is estimated they have four years' work in South Australia alone. □

# BRAIN TRAINS!



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# FAST TRAINS

*from city to Sydney Airport*

## capture private funding interest

A fast train link between the city of Sydney and its airport, with trains running every 15 minutes and taking only 13 minutes for the trip, is attracting funding interest from a private group of companies.

They include Qantas, Australia's international airline, the Westpac Bank and CRI. Other private organisations have been invited to express their interest in financial participation.

The project is expected to cost about \$200 million.

Principal of the private consortium, Mr Peter Willis, Managing Director of CRI says \$250,000 has been spent during the past two years on preliminary aspects of the fast train airport link.

He said airline passengers would pay a train fare commensurate with the existing airport bus fare of \$4, but commuter weekly and monthly fares would be lower, and comparable to similar State Rail fares.

The NSW Government expects the new line could be running in 1993.

While the private consortium has not revealed details of its proposals, a number of options for building the rail link have been suggested.

The possibilities range from an underground line from Sydney's busy Central Station to both the domestic and international

terminals, an above-ground line using the existing line to Sydenham and then following the present goods line to Mascot, or another alternative could follow the F5 Freeway corridor.

While private enterprise will fund the link and collect the fares, it will be returned to State Rail after the negotiated lease has expired.

Currently 90 per cent of passengers using Sydney airport travel by road, and the taxi trip from the city can take 45 minutes or more.

Sydney airport currently caters for 14 million passengers annually. The recently-released Draft Environmental Impact Statement for the proposed third runway forecasts this figure to reach 18 to 24.6 million passengers in the next 10 years.

Road transport to the airport and its surrounds continues to experience worsening congestion. Ninety per cent of Qantas' 8,000 staff travel by car each day. Forty two per cent of airline passengers travel to or from the airport by taxi, 40 per cent by private motor vehicle and 16 per cent by bus or coach. Each day 82,000 vehicle trips are made to and from this area.

An airport rail link will improve access and provide a safe and reliable mode of transport. Part of the New South Wales Tourism Development Strategy is to begin assessing proposals for such a link.

The concept of an airport rail link has been raised over many years.

In 1977, the Major Airport Needs Study (MANS) examined public transport access to Sydney airports. The study concluded that coach, light rail and suburban rail can provide technically feasible solutions for public transport needs. In 1978 the Public Transport Commission engaged Travers Morgan to carry out a further study. At that time, several light and heavy rail routes were identified.

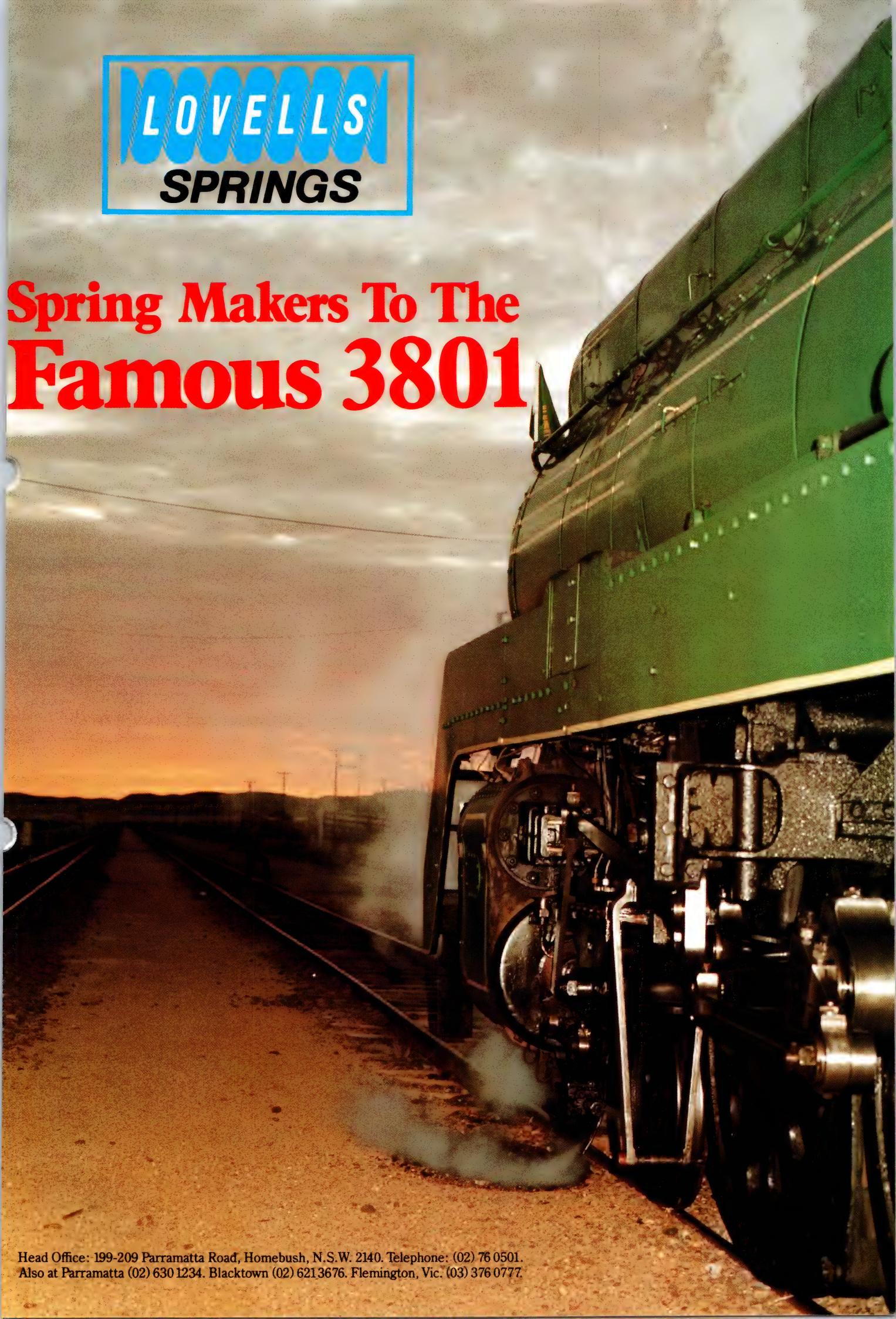
In 1989, a consortium of CRI, Qantas and Westpac commenced study of rail routes from the CBD to the airport. The consortium recently completed and submitted its proposal to CityRail and the New South Wales Government. CityRail has evaluated the preliminary proposal and believes the development is technically and commercially viable, subject to a detailed evaluation of construction costs, market demand and financing options.

Assessment criteria includes: technical quality and feasibility; economic feasibility; financial benefits to NSW Government and economy; corporate credibility of proposer(s); management, construction and operational expertise of proposer(s); and financial aspects.

Following this process, the preferred tender will be selected. □

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# Thirty big for expanding

*And, there are more on the way*

Rail freight haulage services across Australia are expanding at such a rate that 30 new more-powerful locomotives, some capable of developing up to 4,100 BHP (gross) and travelling at 110 km/h will be seen on the tracks from the end of this year.

They include eleven of the most powerful locomotives to be ordered by a government railway network in Australia, the JT46C powered by 16-cylinder diesel engines.

These locomotives will go to Australian National Railways which has introduced the RoadRailer system of freight transport and hopes to operate it Australia-wide with the approval of all State rail authorities. The RoadRailer is a semi-trailer road vehicle which quickly and easily converts to rail track operation.

It is suited particularly to long-distance haulage. Two men, one of them the truck driver, can convert the vehicle to rail track operation in less than five minutes using the air-bag suspension system built in to the RoadRailer itself. Details of this new service were published in the previous edition of *Network*.

Australian National's decision to purchase the eleven locomotives was based on lower capital and operating costs compared to equivalent power from fourteen 3000 HP locomotives.

The new JT46C (SD60 series) locomotives will be designated AN-Class and will offer considerable savings in maintenance and spare parts, according to AN's Technical Services general manager Andrew Neal.

"Components of the AN-Class will be interchangeable with locomotives in our existing DL fleet. Both are powered by two-stroke General Motors diesels and they have the same pistons, connection rods, valves, cylinder heads, alternator and generator," he said.

"We expect the ANs to perform better than the DLs. The DLs are covering about 280,000km a year each - which means for every hour of the year their average speed is 31.7km/h," he said.

With exterior design based on similar lines to

the EL-class, the ANs will feature the same self-diagnostic computer technology which has proven invaluable in the DLs and ELs in speeding fault rectification. The AN's engine and traction equipment will be identical to General Motors' SD60 series, one of the most modern and powerful locomotives in use in the United States. Rail operations in North America have 1150 of the SD60 locomotives in service or on order.

"For some time now the world leaders in locomotive technology (EMD) General Motors and General Electric in the US have been putting their developmental effort into 4000hp locomotives," Neal said. "The AN-class really enables us to take a leap forward in our motive power fleet by allowing us to run longer and heavier trains more efficiently."

Commonality of spare parts with the existing 'DL' fleet was also another factor in this decision. Technical details of the locomotive area:

Wheel Arrangement	Co-Co
Gauge	1435mm
Length O/A	22595mm
Width	2926mm
Engine	EMD 16-710 G3A
Alternator	EMD AR11 WBA CA5A
Continuous T.E.	323 kN
Max. Speed	110 km/h

They will be powered by the Electro-Motive Division of General Motors 16 cylinder 710G3A diesel engines developing 4100 BHP (gross) and continuously rated 3850 HP for traction. This engine and the associated traction equipment is identical to EMD's SD60 series locomotive of which 1150 are in service or on order in North America.

The traction equipment, alternator, traction motors and micro-processor control are already in service with AN on their fleet of fifteen 'DL' Class locomotives.

Clyde Engineering Motive Power Division is the supplier.

# new locomotives freight services

## ***15 electrics for Queensland***

Queensland Rail has ordered fifteen 3 MW 25 kV AC electric locomotives at a contract price of \$43 million.

The contract resulted from the announcement of the new Gordonstone underground coal mine in Central Queensland which will place additional demand on the Queensland Rail electrified system.



*The RoadRailer is heralding a new era for freight transport in Australia. A semi-trailer road vehicle which quickly and easily converts to rail transport, it continues to attract widespread trade and media interest wherever it is shown.*



# TRACKS

The new AN-Class locomotives for Australian National will have an exterior design similar to the EL-Class shown here, and will be equipped with sophisticated computer technology.



Hitachi electrical and traction equipment will be incorporated into these new locomotives to be manufactured in the Brisbane and Bathurst plants of Clyde Engineering. Local content of the locomotives will exceed 75 per cent. The Hitachi equipment, which has proven to be very reliable in the first batch of ninety locomotives already in service with Queensland Rail, encouraged Clyde to form a collaboration agreement with Hitachi for this and future electric locomotive contracts.

The Clyde locomotives will incorporate design improvements developed from field experience on the first generation locomotives.

Delivery of first locomotive is scheduled for May 1992 and then at the rate of one per month. Technical details are:

Wheel Arrangement — Bo-Bo-Bo
Gauge — 1067mm
Length O/A — 20546mm
Width O/A — 2720mm
Mass — 100t
Power Supply — 25 kV 50Hz AC
Cont Power at Rail — 2900kW
Max Tractive Effort — 375kN
Cont Tractive Effort — 260 kN at 40 km/h
Max Speed — 80km/h

## Less noise on low throttle

The State Rail Authority of New South Wales has embarked on a new locomotive acquisition program with an order for four new 81 Class locomotives. These new locomotives will be fitted with a modified muffler, developed from extensive testing in the Hunter Valley, designed to reduce noise levels by as much as 19 dB in low throttle settings.

Clyde engineers worked with NSW State Rail engineers and noise consultants using computer modelling to design prototype mufflers. Linear noise level at a distance of 150 metres from a consist of four locomotives fitted with the new mufflers is predicted to fall from 103 dB to 85 dB.

The order eventuated from an initiative by Clyde and the SRA to utilise some of the surplus inventory originally purchased to support the fleet of 81 Class locomotives supplied by Clyde during 1983-1985. This initiative was incorporated as a recommendation in the Booz-Allen and Hamilton Locomotive Fleet Plan report to the SRA, submitted in January 1990.



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# TRACKS

The SRA will supply engines, some generators, electrical cubicles, other minor equipment and twenty four D67 traction motors for rebuild to D78 standard to match the performance of the 81 Class locomotive.

The purchase of these four locomotives is a significant benefit for SRA and represents a 30 per cent discount to new price as a result of the contribution of the surplus inventory. Delivery from the Bathurst plant of Clyde Engineering is expected to take approximately twelve months.

The four new locomotives will cost more than \$13 million. They will join eighty 81 class locomotives servicing the Hunter Valley and southern regions of New South Wales. Four of these locomotives are used to haul each 8,400 tonne coal train in the valley. They successfully operated a recent 1.3 kilometre Superfreighter train to Melbourne.

NSW Transport Minister, Mr Bruce Baird, said "In addition to the four new 81 class locomotives NSW Freight Rail recently called for expressions of interest for the acquisition of another 80 new locomotives to haul freight following an impressive

increase in its share of the interstate freight transport market."

Freight Rail has invested in improved terminal facilities, upgraded infrastructure, modern train communications and 550 freight containers as part of the NSW Government's \$600 million rail investment program in rural areas.

Rail has increased tonnages by 25 per cent on the Sydney-Melbourne route during the past five years. In 1989/90, more than 332,000 tonnes was hauled by rail between Sydney and Melbourne. This represents an increase of 26,000 tonnes on the previous year.

In the Hunter Valley, forty 81 class locomotives currently are dedicated to hauling export coal and wheat into the Port of Newcastle. Last year, Freight Rail's coal and minerals operations in Newcastle saw more than 28 million tonnes of coal carried from as far afield as Ulan and Gunnedah, earning valuable export income for Australia.

The new locomotives for Australian National, Queensland Rail and NSW State Rail will bring a new dimension to rail freight haulage in Australia with faster and more efficient services to meet the requirements of commerce and industry. They will also make a substantial contribution to the growth and development of Australia's international trade. □

## QR's new Commissioner sees strong potential



**N**ew Commissioner, Mr Vince O'Rourke, sees exciting prospects for Queensland Railways with its emphasis on business-led growth, the world's best coal operations, high quality passenger services, and advanced Automatic Train Control (ATC) and Centralised Traffic Control (CTC) systems.

Mr O'Rourke joined QR late last year after 36 years with the NSW State Rail Authority where he was general manager of the express rail division.

He says Queensland Railways is at a transition stage moving from the traditional and engineering operational focus to a commercial and customer emphasis.

"Becoming a corporation in the near future is a major step forward. We will compete in the marketplace and operate along private sector lines," he said.

Vince rates bulk mineral haulage and electric passenger services as the major strengths of QR's operations. The highly-efficient haulage of 70 million tonnes of coal annually by QR has won world-wide acclaim.

The 70 per cent increase in patronage on the Brisbane metropolitan system since electric trains were introduced in 1979 is another example of strong acceptance in the marketplace. "The popularity of the electric Spirit of Capricorn has almost doubled passenger numbers on the Brisbane-Rockhampton sector," Mr O'Rourke said.

He said the current restructuring of QR to focus on its key business of bulk haulage was a significant development. In addition, the increased integration between rail and road transport (important across Queensland's vast 10,000km network) should increase QR's overall level of business.

Mr O'Rourke is optimistic about the impact of the new National Rail Freight Corporation on QR's operations.

"Clearly, the Corporation will generate benefits nationally, but the advantages to QR will extend well beyond the interstate train service from the New South Wales border to Brisbane," he said. "The Corporation will open up new markets for us into North Queensland."

# Just what is a Superfreighter container ?

**S**uperfreighter containers provide a terminal-to-terminal unit train service. The Superfreighter service started in 1983/84 and has revolutionised Australia's rail freight. There are no shunting or siding movements which could cause delays in transit.

A platform container loaded with aluminium ingots (top), and liquid storage tanks on a Flat Rack container.



# CORROSION RESISTANT

## ALUMINIUM RAIL WAGONS DELIVER



James 5148A

# TRACKS



The versatility of rail containers is demonstrated by this series of pictures. A Flat Rack with gates (top) and bulk bags which allow tarping when required. Collapsed Flat Racks (centre left) stacked neatly and awaiting return-empty transit. A Tautline side-loading container (centre right) speeds grocery products to metropolitan terminals. The half-height container (centre below) is for heavier products and allows double or one-and-a-half stacking. Flat Rack containers (lower) loaded with carbon black transporter units.



Domestic freight containers cover a variety of configurations from simple Platform containers (being simply a base), Flat Racks (being a platform with ends), to half height containers, side open containers, open top containers, special ventilated containers, refrigerated containers, bulk liquid tanker containers, and the standard general dry cargo containers. The containers come in both 6.1m and 12.2m lengths.

This varied list excludes a host of specialised containers designed for specific freight movements such as containers with split levels for paint, containers with tie-down points for furniture. In fact, almost anything that can go on a road truck can go in a suitable container.

All containers must meet the gauge – outline restriction set by tunnel and bridge height clearances, and lifting/strength requirements. Other than that, any configuration is acceptable. The aim is to maximise the volume and minimise the tare weight. Specialised containers

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## TRACK

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- Warp
- Gauge (head & web)
- Rail shape
- Rail corrugation

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- Track condition profile (Histogram)
- Comparative track condition profile



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The RAILSCAN processing unit has menu driven, on-board and post analysis systems.

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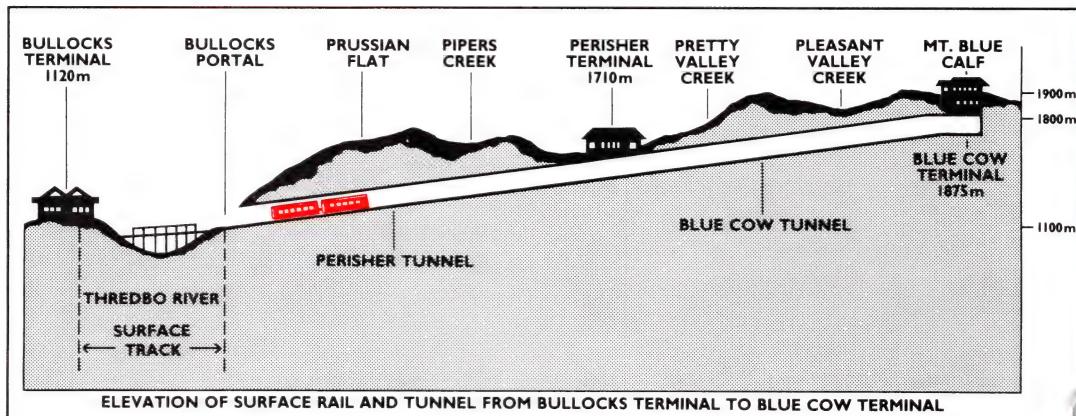
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**Tamper** The Tamper logo consists of the word 'Tamper' in a bold, sans-serif font next to a stylized 'TF' symbol.



**Tamper**

The train runs for 8.5 kilometres, mostly underground, but offers bicycle-path excursions on the roof of Australia.



CONTINUED FROM PAGE 24



*The Bulk Industrial Tank is a specialised container used for a specific-purpose customer.*

provide a competitive market advantage to the innovator.

The maximum container height has recently increased from 2.74 metres to 2.93 metres to gain extra volume. This was achieved mainly through lowering the rails by removal of ballast, aided by scraping of tunnels and removal of obstacles. A maximum 3 metre height currently is being investigated. The objective is to attract more cubic freight to rail.

Superfreighter is expanding.

The Sydney-Perth Superfreighter completes the Australian network and terminals are being expanded in all capital cities. Superfreighters will continue to depart more



regularly in shuttle services. Train length will increase as crossing loops on the single track sections are extended. The first Sydney - Brisbane Superfreighter was less than half the current train length.

Rail carried 112,000 standard shipping container boxes for a weight of 1.4 million tonnes in 1989/90, including imports, exports, "landbridging" between ports, Tasmanian freight and repositioning empty shipping containers.

This is only a part of the total of 5.5 million tonnes of containerised freight.

Many customers currently are experimenting with the Superfreighter service for the

first time. They aim to gain experience and tailor the Superfreighter service to their freight requirement while the economy is less active than usual. A slow economy is an opportunity to prepare for the future which may well be a future of high fuel costs and high road registration charges.

By providing an effective service, Superfreighter is destined to play an active role in Australia's transport future.

An explanation of what is meant by a Superfreighter container was sought by readers following publication of the article *The Target Freight Market* in Vol 27, No 4 October 1990 edition of Network. □

# excursion on the Skitube

ONE OF AUSTRALIA'S UNUSUAL TRAINS, THE COG-RACK SKITUBE WAS BUILT TO TAKE SKIERS TO THE WINTER SNOWFIELDS - BUT INCREASINGLY IS ATTRACTING WARM WEATHER CUSTOM.

The Skitube is one of Australia's most unusual trains, an electric cog/rack driver system operating 18 kilometres east of Jindabyne in the Kosciusko National Park over the Thredbo River bridge and into the longest train tunnel through solid rock in the southern hemisphere.

Designed as a winter access system to improve entry to the Perisher skifields the train serves a summer excursion purpose in

providing a link to mountain trails, wildflowers and bush scenery.

It can carry 225 passengers and runs for 8.5 kilometres — 6.3 of them underground through a tunnel which has a maximum depth of 550 metres below the surface. Its uphill speed is 40 km/h and downhill speed is 21 km/h.

The cog/rack system is used for steep gradients. The cogs mounted beneath the powered rail cars mesh into a rack of teeth

set between the wheel tracks. As the cogs revolve, they pull the train forward and can thus cope with considerably steeper gradients than can wheel traction driven systems.

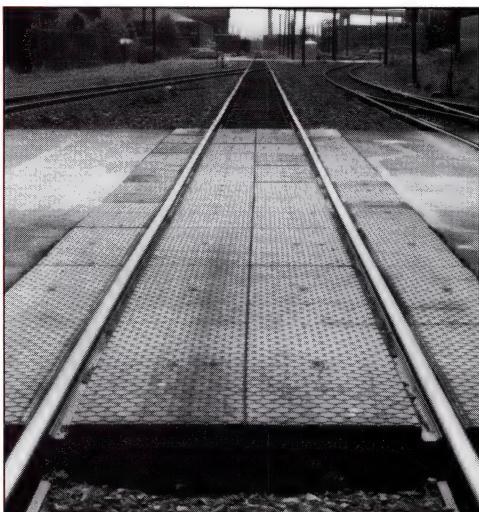
Downhill, the rack system is used for braking. As the Skitube travels downhill the braking system generates electricity back into the internal power grid which assists the train when travelling uphill.



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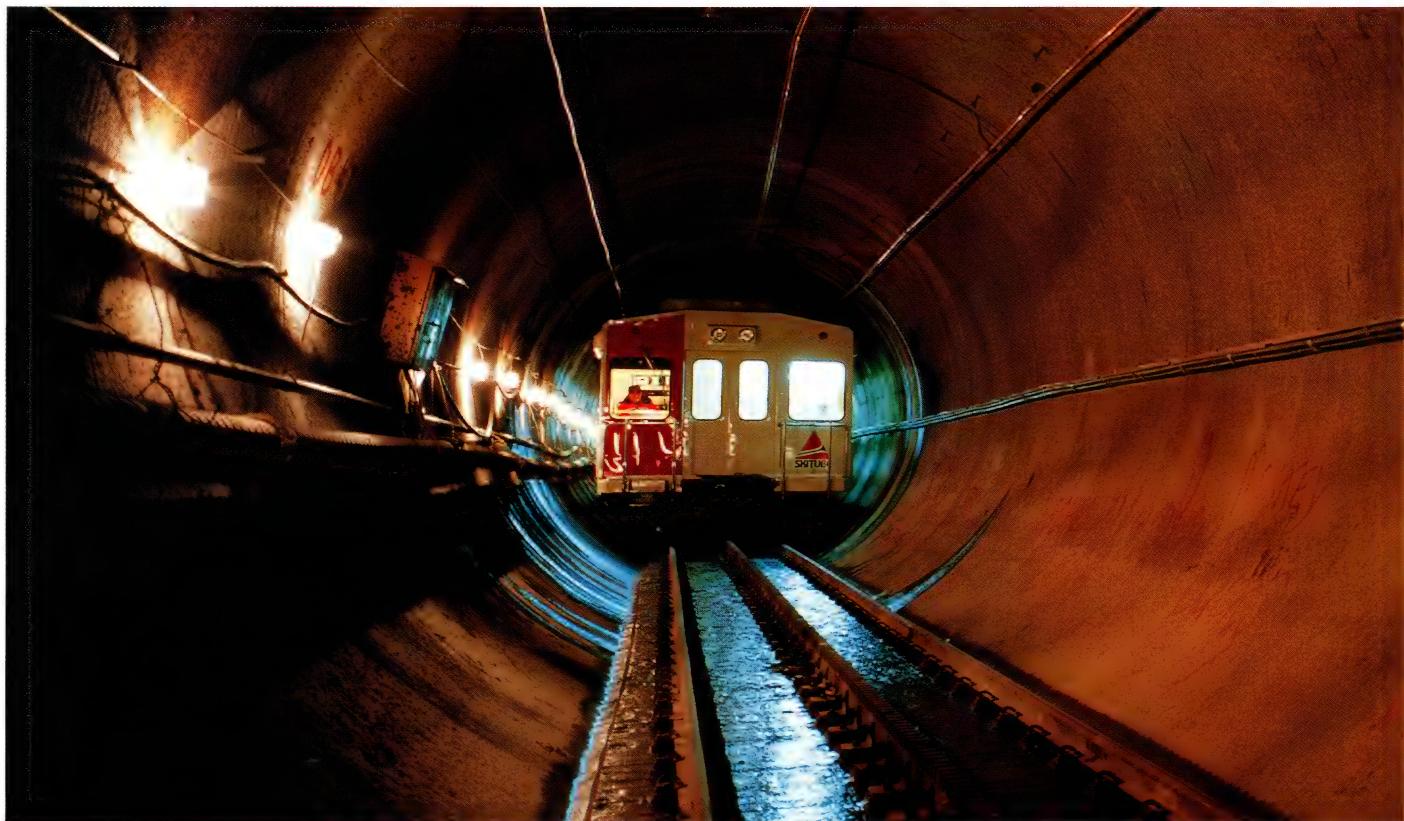


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# TRACKS



The view along the tunnel as the Skitube approaches. In sunlight (right) it offers spectacular scenery in mountainous terrain.

The majority of the technology used in the building of Skitube was imported from Switzerland, as the Swiss are world leaders in cog/rack technology.

Skitube uses a rack system invented by Swiss Engineer, Roman Abt, and first used in the Harz Mountains in Central Germany in 1885.

The safety record of cog/rack systems is an enviable one in the world of railways. There has not been a derailment or serious accident occur on these systems throughout the world. This is an outstanding achievement considering the extreme conditions under which most of these trains run, normally in steep alpine environments with their accompanying snow and ice hazards.

In Australia, the alpine diurnal fluctuations of temperature can be as great as 25°C.

Skitube features a high level of safety control technology built



into the trains and railway. Some of these include—

- Four independent braking systems, two electrical and two mechanical.
- A time dependent deadman pedal and attentiveness control in the driver's cabin.
- Computerised speed monitoring devices on the train and rail — A Hasler speed detection unit on the train and magnetic speed control units on the track.
- A sophisticated railway computerised monitoring system which allows a controller at Bullocks Flat to monitor the train's progress, points status and state of the electrical grid.
- Roll-back protection devices.
- A state of the art

communication talkback system between trains and the control room.

The Skitube is operated in association with a bicycle hire service. A full or half day bike hire includes a free return trip on the Skitube to Mount Blue Cow and Perisher where visitors can ride through a summer wonderland of natural beauty, including the road to Charlotte's Pass or to Mt. Kosciusko and back.

Mount Blue Cow is Australia's highest alpine resort where the views of the seemingly endless alps are breathtaking.

For more information: Perisher Skitube Joint Venture, Bullocks Flat, Alpine Way, Jindabyne, NSW 2627.

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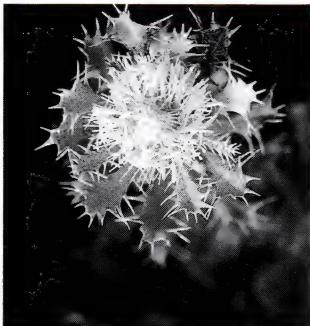
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A GREAT COMPANY IN GREAT COMPANY

# TRACKS



Dryandra  
Sessilis

By BRIAN STEVENS

**A**leaden grey sky greeted our early morning tryst at the Westrail Centre, East Perth, as Joan trundled her wheeled case through the shallow puddles on the concrete and I luggered mine to join her at the end of the dwindling queue, our taxi snarling off back to the wakening metropolis.

The front seats on the bus are best, she had said, but we were late and watched helplessly as the seats filled progressively towards the rear. Our names recorded, bags stowed, we walked the aisle in tandem right to the rear and sank with a comfortable sigh.

A few whispered last exchanges between officials and the driver up front, the quiet throb become a steady roar beneath our feet, and we were away gliding through suburbs past houses, schools, playgrounds, parks, churches, factories, airfields, the railway museum, and into the open countryside.

So began three days of fascination with the beauty and grandeur, the bright distinctive colours, and the rugged natural loveliness of Western Australia's wildflowers on what Westrail Travel Centre called its Northern Wildflower Preview.

Early on this first day we were each given a scrapbook and roll of adhesive tape to secure our wildflower specimens, and a complimentary copy of the 160-page beautifully-produced hard-cover book *Wildflowers of Western Australia* by C.A. Gardner. The book has 355 wildflower photographs in colour. The late C.A. Gardner is credited with having had a greater knowledge of Western Australia's unique flora than any person now living.

For 41 years he collected botanical specimens gathering 347 sets of them in the early 1920's as a member of a Forests Department expedition to the North Kimberley ranges. He was Government Botanist and Curator of the Western Australian Herbarium for 34 years. His book was first published in 1959 and is now in its sixteenth edition with the original text updated as necessary by Mr R.D. Royce who succeeded him as Government Botanist.

# An with WA

As C.A. Gardner says of his beloved wildflowers in the book's introduction:

*The splendours of colour and the diversity of tint and shade have made this flora world-famous, for, dull though most of the foliage may be, sometimes small, dry, brittle and unattractive, the delightful form and hues of the flowers are outstanding.*

We turned the pages savouring what we hoped was ahead of us while a mixed lot of heads and hairstyles bobbed along in rows above the seats in front of us. They were mostly white and greying with a hint of the colour of younger years capturing the brief moments of early sun as the clouds began to farewell each other and find their space above.

## Accents still fresh and clean

They came from England only days before with accents still fresh and clean, from Sydney brash and full of loud conversation, from New Zealand reserved and aloof, from Perth with the possessiveness of locals, and others like ourselves from different parts of the vast Australian continent subconsciously displaying our own individual characteristics.

Widows, newly-weds in older years, single men struggling with loneliness and isolation, couples loosely thrown together by common bonds, from many different backgrounds and experiences of life, each with a human story of tragedy or happiness and gratitude for life itself, jealously guarded within and never to be revealed, at least not on this trip, they sat and talked quietly creating their own anticipation.

As the bus smoothly gathered speed along the open northern highway I made a brief attempt at conversation with the lady in front who had dropped a pamphlet. Returning it to her I remarked: "The rain has been good this year. We should see the flowers at their best."

"I hate the rain," she said, her looks and words engulfing any further attempt of mine to be pleasant.

# interaction wildflowers

I looked at Joan beside me. "A real pill," she said never quite losing familiarity with her nursing terminology whenever she felt it could be applied descriptively to people. And so we gradually made acquaintances with the other greying, balding heads and bodies as we went along, mostly at tea and meal stops.

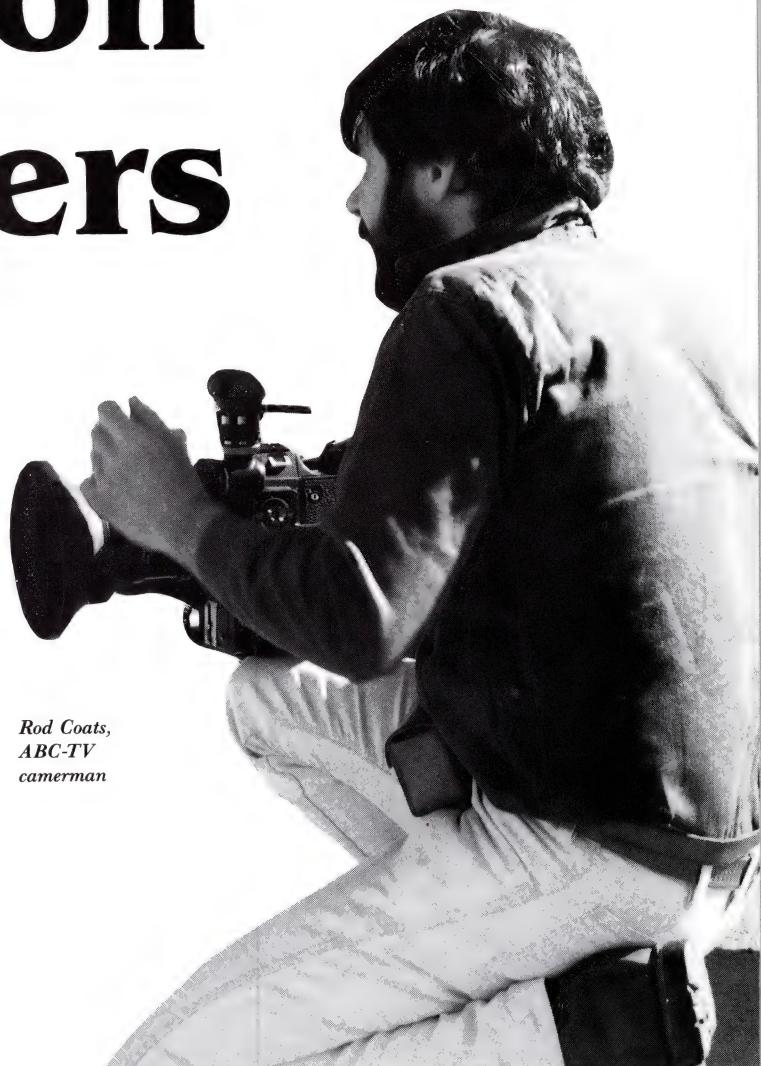
The first was Gingin beside a small park with an historic waterwheel, a lovely creek, a bridge leading to a knee-deep carpet of arum lillies blooming beneath the canopy of the eucalypts, and beyond this on the other side of the road a few struggling shops. A gas stove hissed on the far side of the bus, out came the bench seats, the tables, and morning tea. The air was pure and fresh, the scenery pleasant and the Westrail service perfect with tea, coffee, and home-made carrot cake.

Then onwards along the Brand Highway to Badgingarra with our botanical guide Gladys (Glad) Walker and bus driver Keith Leggatt providing occasional commentary over the PA system about the topographical features and the landscape, local history, and the now emerging growth of native shrubs and trees in flower. They were very informative and unselfishly enthusiastic in sharing with us their knowledge, experience and love for the Western Australian countryside. They were assisted by Barbara Crocker, our tour hostess.

"You may have noticed a white van trailing behind us all the way from Perth," Glad announced. Sure enough there was a white van keeping measured pace at the rear. "That's a camera team from ABC television in Melbourne. They'll be filming as we go along and they would like you to behave naturally as if they were not present. If anyone does not wish to be filmed just let them know."

## **ABV-2 Natural History Unit**

We discovered later that our shadows were Richard Campbell, producer, Rod Coats, cameraman, and Greg Wignell, audio operator, from the ABV-2 Natural History Unit, and they were obtaining footage for the national



*Rod Coats,  
ABC-TV  
cameraman*

The native wildflowers of Western Australia are world-renowned; there are 7,200 different varieties of them. Westrail

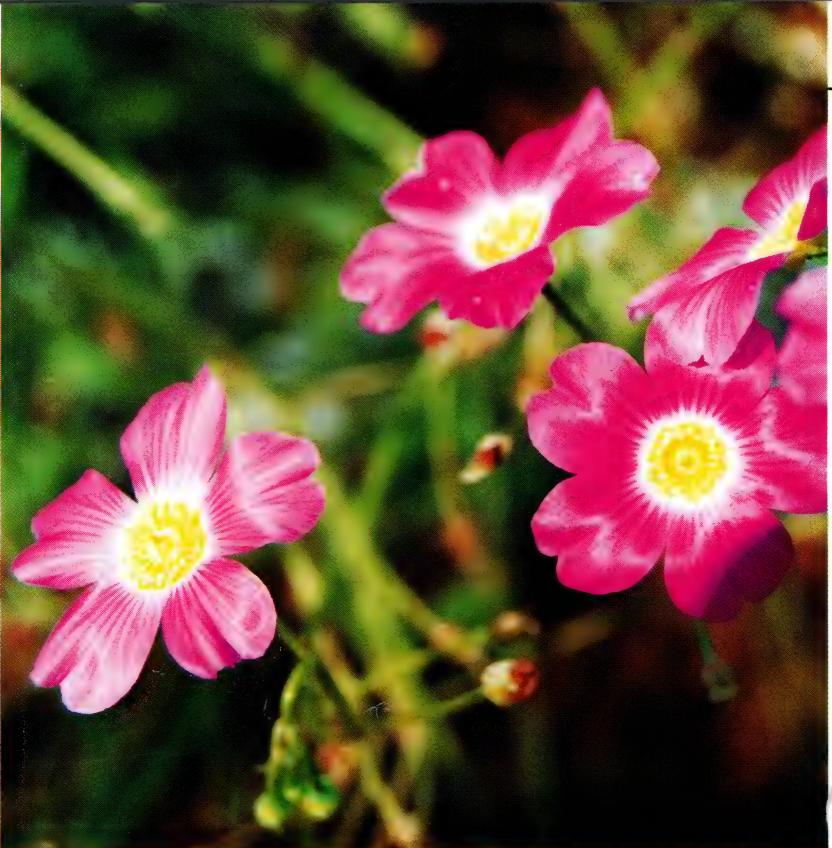
Travel Centre, Perth, operates 27 wildflower bus tours a year. Last year the Centre won the Sir David Brand Award for Tourism (Tour Operator).

Westrail Travel Centre's manager of travel promotions, Greg Ellis, says 40 per cent of the wildflower tour bookings are from

Western Australians, 48 per cent from people living elsewhere in Australia, and

12 per cent from overseas mainly New Zealand and the United Kingdom, but also from the USA, Japan, Europe and South America.

# TRACKS



*Wildflowers, and Westrail's botanical guide (clockwise from bottom left): Banksia Prionotes; the acorn banksia; Clianthus Formosus, Sturt's desert pea; Calandrinia Polyandra; a natural garden of native everlastings; Eucalyptus Macrocarpa Hook; Ms Gladys Walker, botanical guide. Below: Petrophile Drummondii.*



► "Wildscreen" series of programs, a half-hour series utilising overseas and local material. Their most recent successes were *Eagles and Other Birdies* about the relationships between golf courses and wild life, and *Tale of Three Islands* featuring bird and sea life centring on the offshore islands of Tasmania.

Our contribution to the series was to be a program based on the interaction between people and wildflowers. How do we identify with the tough resilience of little plants, struggling to exist in dry, sandy, rock-impregnated soil, which each year burst into flowering brilliance after the rain? Quite well, Joan thought; she talks to plants and flowers to make them grow. Usually she was second off the bus after Glad Walker gently weaving through the low shrubs, bending, carefully

parting the undergrowth to find the meaning of her life nestling there in the tiny petals of some new-born flower of radiant beauty, a motherhood longing fulfilled at last. The cameraman was filming.

Glad Walker passed samples around the bus with the botanical names printed on a card so we could all enter them in our scrapbook. Fingers were busy with the adhesive tape.

In the area around Badgingarra and Eneabba we were able to enjoy a profusion of wildflowers in nature's garden, Glad Walker having surveyed the ground before, knowing just where to stop the bus and leading us to all the right places, showing us samples and telling us a little story about each. We felt privileged to share her knowledge and enthusiasm.

Our first overnight was at Dongara Motor Hotel near the coast where the evening meal was excellent. Food throughout the tour was always more than adequate and of a very high standard.

# TRACKS

*The ABV-2 Natural History Unit film team prepares to capture the next roadside discovery of native wildflowers. Further down the road (far right) it's time for afternoon tea and cakes.*

Accommodation was always very clean, and comfortable, with bathroom, heating, air-conditioning, and tea-making facilities. It rained that night in Dongara, but had cleared again by morning.

Everyone moved one seat in an anti-clockwise direction when we boarded the bus next morning. This was to be a daily ritual designed to give others a share of the benefits of the rear seat. All the wildflower samples passed around the bus ended up there and were kept by the rear seat occupants; the seat was within an arm's reach of the water cooler; and, there was no-one behind you to watch what you were doing all the time.

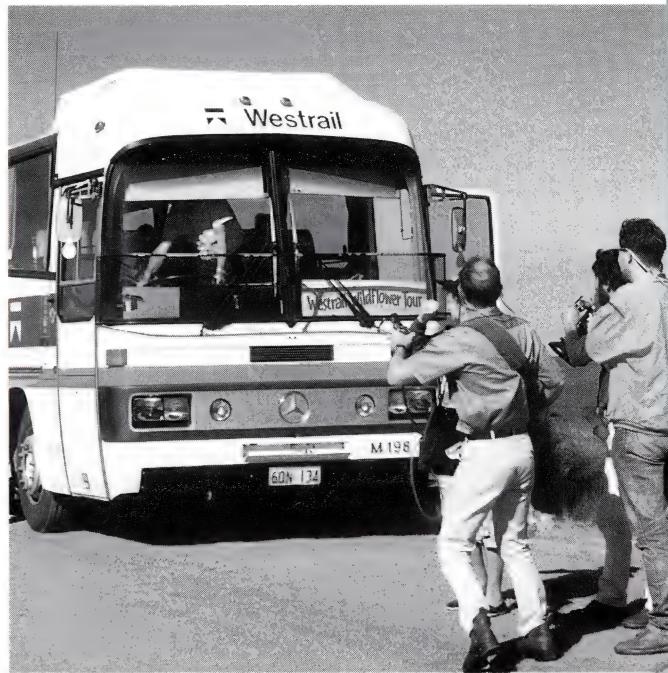
Regular bus-stops during which people infected with wildflower enthusiasm wandered off in many directions making discoveries of their own became a feature of the journey inland through Irwin to Coal Seam National Park with its blaze of colourful rock face left by open-cut miners, and brilliant carpets of golden everlasting flowers in profusion, its rocky crags, and distant valleys following a winding creek bed to the horizon. Boiling the billy for morning tea here was idyllic.

At Morawa we joined the ladies of the Country Women's Association in a well-kept spacious brick community hall with all facilities, for lunch. They had come from near and far and worked hard for days preparing the typical spread for which country women Australia-wide are renowned. In the hall were two huge displays of wildflowers and we were invited to take small samples of them for our scrapbooks.

Then on through Pintharuka, Gutha, Canna, Tardun and Wilroy to the outback town of Mullewa with its sprinkling of aborigines. Some aboriginal children in the school playground waved happily to us as we drove past.

## Delights of our native land

More excursions into the bush, more discoveries and delights of our native land, each one different, each given depth of meaning for us by Glad Walker who knows intimately the individual



characteristics of every flower, plant and shrub; we were on and off the bus with appetites whetted, cameras capturing the memories of marvellous encounters with friends with names like hibbertia hypericoides, caladenia patersonii, verticordia grandis, pityrodia bartwingii, and lechenaultia biloba.

I'm sure when most of us see them again we'll remember their faces, but forget their names — except Joan. Her interest flows from a granny florist. She meticulously recorded each name alongside the sample in her scrapbook, learned the names of those which attracted her most, and so enriched her knowledge and experience in a love of flowers.

And, all the while the ABV-2 team filmed the communion of actions, expressions, and the sources of attention, from eye-level, crouching positions, spread-eagled on the ground, and conducted their interviews with Glad Walker, all in the least intrusive manner of skilled professionals.

Suddenly the bus swung onto a dirt track to stop at three ancient grave sites, the last resting places of three long-forgotten stockmen. Here we were introduced to lechenaultia macrantha, a prostrate little desert plant about the size of a dinner plate which, from a single root, radiates its stems along the ground like the spokes of a wheel the outer rim of which is a ring of flowers deepening in colour from a pale pink to brick red as they age. The common name of this plant is the Stockman's Wreath — and it looks just like a simple wreath made by a florist.

We felt the isolation of the unknown stockmen's graves, the harshness of the environment, and marvelled at nature's way of hallowing the surroundings so that we walked and spoke softly with reverence.

Once through Ambania, Eradu and Northern Gully we arrived that evening in the large seaboard town of Geraldton and luxury overnight accommodation with an evening meal to match. Geraldton had many historical features of interest which our driver Keith Leggatt told us about.

On the offshore islands was the wreck of the Batavia, the Dutch East India Company ship, which founded on its way to Indonesia in the 1600's. The crew mutineed and there was much human slaughter about which books have been written. One of the cannons salvaged from the wreck, mounted at Geraldton Town Hall with its muzzle directed towards the Mayor's office, was later found to be loaded.

An early start was made on the third day. This was the homeward leg and there was much to see and to interest us including Greenough historic hamlet, the famous windswept leaning trees along the coastal strip outside Geraldton, and a visit to the historic Spanish Monastery settlement of New Norcia, with, of course, wildflower stops along the way to see and photograph new species and some of the rarest and almost extinct varieties, and to have our education botanically broadened.

## Scratched out of the earth

Through Carnamah and Coorow to a picturesque setting at Watheroo where a sports ground had been scratched out of the earth, a community centre built to cater for people from miles around, and where the ladies of the Watheroo Branch of Red Cross (total membership five) set up a stall of Christmas cards, stationery, tea towels and other goods embroidered, printed and otherwise decorated with wildflowers. Some good trade was done here in items suitable for Christmas presents.

Lunch in the adjacent dining hall was provided by the Watheroo Football Club Ladies Auxiliary the main dish being a number of different mouth-watering piping hot home-made quiches.

Glad Walker had discovered the largest area of lechenaultia she had seen in 14 years of searching and made sure we saw it that afternoon, its broad mass of deep cornflour blue flowers brilliant in the afternooon sun. Nearby were some spider orchids. Our final wildflower stop was beside a farm paddock to open an old wire-strung gate and enter an area of farmland which the owner had specially fenced off to protect some very rare and endangered species.

The sun was low in the sky and the flowers of these native plants made good use of it to show themselves to us in a wonderful display of colour. Our tour was nearing its end.

We were back at the Perth Westrail terminal at about 6.30 p.m. with another courtesy bus waiting to take us to our lodgings. Joan was tired, but ecstatic; it had been a wonderfully fulfilling experience for her. I had taken a hundred or so photographs of flowers for her album and felt enriched by a new experience which I might not have otherwise undertaken but for her.

"Are you pleased you were dragged along?" were Glad Walker's parting words. Yes, I had to admit I was very pleased and privileged too, to have shared in the joys of discovering for myself a few of the wildflowers of the west. Thanks, Westrail; it was excellent value for my \$340 and we hope to do it again soon. □



The ages of people who go on Westrail wildflower tours range upwards of 55 years, some 30 to 55, and a sprinkling of younger people who in relatively recent times have become more environmentally aware.

Word of mouth is responsible for about 40 per cent of the Westrail Travel Centre business in wildflower tours. Those who go on a wildflower tour often come back again and again for more.

Each tour and each season is a new experience.

The 1991 tour program is available now. An innovation this year is a five-day Outback Wildflower Tour including a visit to Mount Gibson Station Emu Farm.

*Moving it while it's still hot*

# LOADING STEEL AT 200-400°



**E**xpress railing 30 tonne coils of steel while they are still hot (at up to 400 degrees centigrade) is a challenge for Australian rail services which Freight Rail Express in New South Wales has taken up in co-operation with BHP the Big Australian.

Trials are being conducted to establish whether coils of this size and at such high temperatures can be efficiently loaded for rail transport.

Already wagons are being loaded with hot billets at temperatures around 200 degrees centigrade.

Freight Rail Express in association with Australian National, Queensland Railways, the Public Transport Corporation - Victoria (V/Line) and Westrail carries close to two million

tonnes of BHP's steel products annually, travelling on dedicated wagons from Port Kembla and Newcastle to Queensland, Western Australia and Victoria. The introduction of a new service from Newcastle to Melbourne has already seen more than two thousand tonnes per week carried on that corridor.

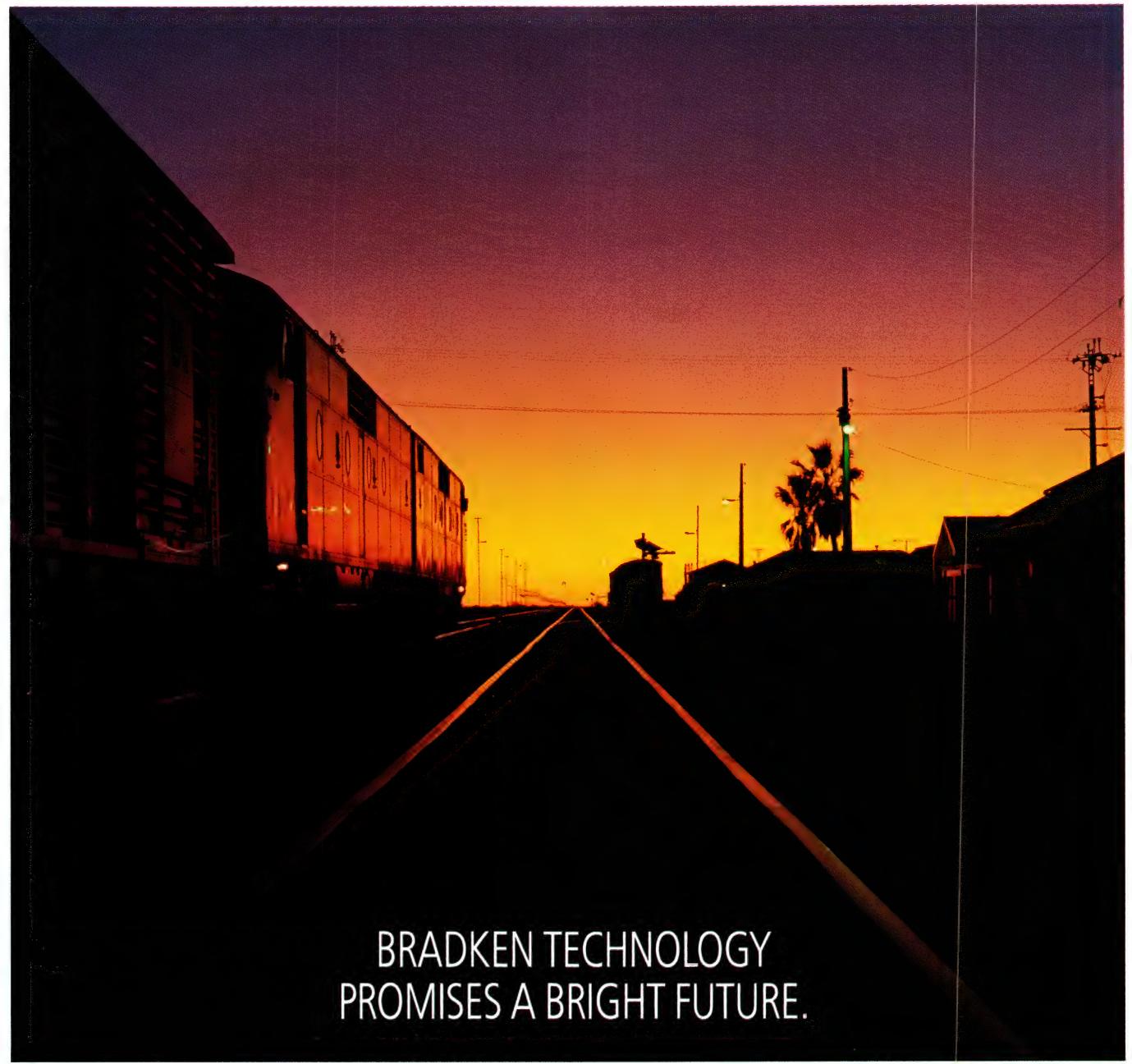
While BHP is rail's biggest steel customer, Express also carries a significant proportion of Comsteel and Tubemakers Products from Newcastle to other states.

Express General Manager, Tom Stuber, said: "Express has introduced a range of initiatives over the past two years to provide a more efficient, cost effective and reliable service for steel customers. One innovation has been

the use of a webbing strap and ratchet to replace the old steel chain and screw which was used to secure steel products onto flat wagons."

The webbing strap is a more secure and reliable device and removes the risk of damage to steel products that could occur from the steel chain. The strap is believed to be the first of its kind in the world and recently generated significant interest when inspected by international steel mill managers, who were visiting Australia for an international conference.

"Another area where rail has applied research to improve customer service is the movement of out-of-gauge steel plate", Tom said.



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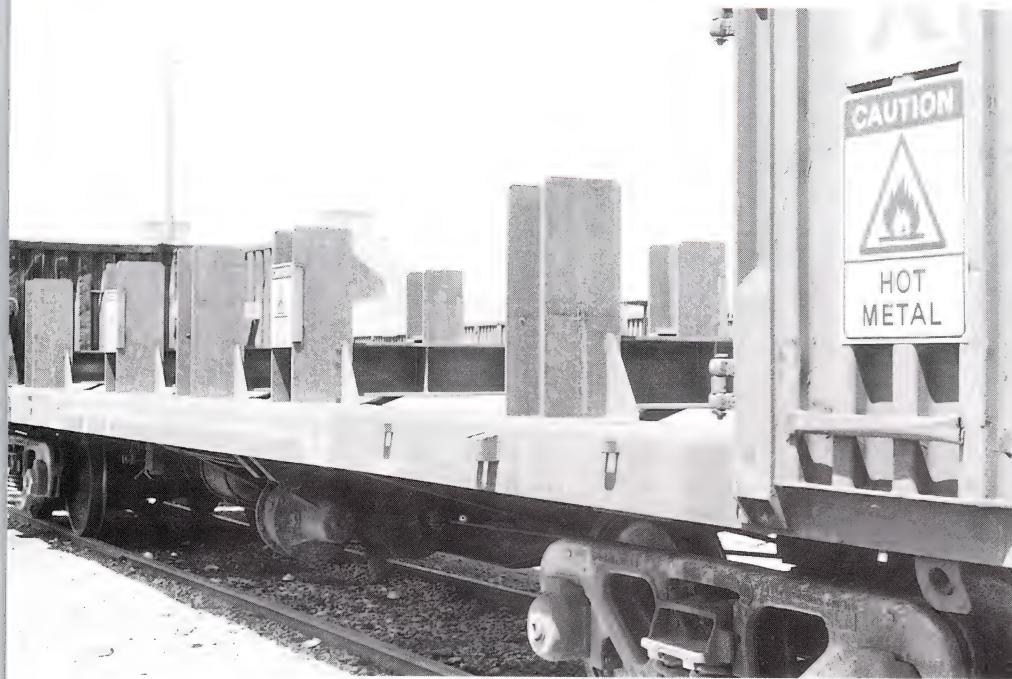
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PROMO STRATEGIES 1169

# TRACKS



A revolution is about to take place with the introduction of new prototype frames for the carriage of steel plate on flat top wagons. There are currently two methods of moving out-of-gauge steel plate. One is the carriage of the plate on trains known as out-of-gauge trains, which operate only on weekends and which require major operational constraints to avoid crossing opposing freight movements.

The second is to mount the steel plate on special wagons which have a fixed angled frame to carry the plate at an angle to ensure that it remains within gauge requirements. This means the plate must be loaded and unloaded at an angle, a task which is difficult to perform and one which is both time-consuming and antiquated.

The new prototype frame structure is a removable frame that can be fixed to flat top wagons and allows steel plate to be loaded horizontally. After loading has been completed the frame on the flat top wagon is tilted to ensure that the steel plate travels within gauge requirements. Unloading steel plate is then a simple task, requiring the frame to be placed back in its horizontal position. This new development is also believed to be the first of its kind in the world.

"One of the most successful projects undertaken by Express' Steel section has been the introduction of specially-developed hot billet wagons

to run from BHP's Newcastle plant to their mini-mill in Queensland", Tom said.

## 200 degrees Celsius

BHP expressed a requirement to load wagons straight from the steelmaking process at temperatures of more than 200 degrees Celsius. After meeting with State Rail's design people, Occupational Health and Safety experts and Operations, a wagon design and train program were submitted.

Operations to Acacia Ridge in Queensland have been such a success that BHP is now seeking similar services for their Geelong, Victoria plant. In addition, a new Newcastle/Perth service has commenced carrying one thousand tonnes of steel product per week. This was made possible by modifying sixty-four AKHX Wagons for special use in the conveyance of steel products.

"We are currently carrying 5000 tonnes of hot billets a week to Brisbane and Melbourne", Tony Barnes, Manager Steel and Manufactured Products said. In road transport terms that means 200 semi-trailer movements kept off the Pacific and Hume Highways.

Another major product which has required a dedicated fleet of specially-developed wagons is the coiled steel traffic. "The future market

requirements for coiled steel products is in coils of 30 plus tonnes", Tony said. "We have developed new NCPF wagons capable of carrying two steel coils weighing up to 30.5 tonnes each."

Rail currently is carrying out trials to meet the demand for the carriage of these 30 plus tonne coils. The trials are to determine whether coils can be loaded while they are still hot, at temperatures up to 400 degrees. The ability to move steel products in this fashion will give rail a huge advantage over road based competition.

## Dedicated train

Express runs a full train dedicated to coil movements three times a week, from the BHP Slab and Plate Products plant in Port Kembla to Tubemakers in Newcastle. The train is regularly run with 32 wagons carrying close to 4000 tonnes a week.

This is the equivalent of more than 160 semi-trailer loads which would otherwise travel through the congested Sydney metropolitan area on their way north to Newcastle.

A third successful operation has been the introduction of modified NCWF wagons for BHP's Newcastle Rod Mill. Modifications were submitted and approved, effectively doubling the carrying capacity to 54 tonnes. At the same time loading and unloading times were reduced to less than 20 minutes a wagon.

## Modifications

Further modifications are planned, which will increase the capacity by an additional 10 per cent, to 60 tonnes per wagon. Efficient train scheduling and reliable operating specifications mean rail's steel customers are able to make great savings in reduced warehousing costs and product availability. BHP is able to meet customers' demands for just-in-time inventories.

BHP has also hooked into State Rail's Rolling Stock Monitoring System for information regarding the availability of steel wagons. It monitors train turn-around times within its own mills, and on its own plants. This system of self-monitoring has led to an increase in the turnaround figures of rolling stock, and a decrease in "dead" wagon time. □

# The Ettamogah newspaper run



*The next newspaper you buy in Sydney, Melbourne, Adelaide or elsewhere around Australia might be printed on these rolls of newsprint being loaded carefully into a rail transporter by a forklift driver at the Australian Newsprint Mills production plant.*

**A**ustralia's rail systems play a major role helping to create the daily news headlines. That's because the lion's share of the paper news is printed on is delivered by train. Each year more than 150,000 tonnes of newsprint travels by rail.

It's not surprising that the company producing all this newsprint, Australian Newsprint Mills Limited, is a valued customer of the rail systems.

ANM is Australia's only manufacturer of newsprint, and its two mills, at Boyer in southern Tasmania, and at Ettamogah, not far from Albury in New South Wales, supply about 80 per cent of the nation's newsprint.

Production at Boyer started in 1935 after the company was formed by the major Australian newspaper publishers, and to meet their growing needs, the Ettamogah mill came on line in late 1981.

Built at a cost of \$200 m, Ettamogah is one of the most advanced mills in the world, and it's environmentally friendly.

That's because the process used to convert the timber to pulp is based on modern thermo-mechanical pulping technology which increases production while eliminating the harmful environmental effects of conventional paper-making processes.

## LARGER PAYLOAD

### ALUMINIUM RAIL WAGONS DELIVER



James 51488

# TRACKS



A fully-laden newsprint train leaves the mill every weekday, its cargo valued at more than \$750,000.

No chemicals are used in the process. Instead, heat, water and mechanical energy are used to break down pine wood-chips and thinnings into pulp. This means 95 per cent of the wood fibre is recovered, compared to less than 50 per cent in chemical pulping plants.

The pine comes from State-owned plantations in the eastern Riverina and northern Victoria. By creating paper from these thinnings, the mill is making the most of what previously was waste material.

## A special computer program

At the mill Charlie Farrah was compiling newsprint orders using a specially designed computer program. Charlie is distribution supervisor at Ettamogah. Part of his job is organising the mill to cut the jumbo rolls of newsprint coming off the production line down to size.

Out in the mill, huge machines known as winders, can cut up to 11 small reels from a jumbo reel and re-roll them to suit the customer's order. Once cut, the reels are automatically wrapped, weighed, measured and labelled, ready for shipment.

Getting the newsprint to the customer's warehouse is also Charlie's job, and 140,000 tonnes of Ettamogah's yearly production figure of around 200,000 tonnes are sent by rail to destinations Australia-wide.

The mill has its own siding, and a train is scheduled to leave each weekday. Usually a block of 20 wagons is loaded with about 900 tonnes of paper. At the current market value of \$850 a tonne for newsprint, each train-load is worth around \$750,000.

The number of wagons can vary to suit fluctuations in production or demand; however, these are rare because newspapers have fairly fixed print runs.

It was always part of ANM's plan to use rail for distribution and building the mill on the Melbourne-Sydney corridor was no accident. "Newsprint is heavy, and it has to be sent long distances, so rail is pretty much the way to go as far as we're concerned," said Charlie Farrah.

Newsprint from Ettamogah is sent by rail to Sydney, Brisbane, Adelaide and Perth. The Perth traffic travels from Ettamogah via Cootamundra and Broken Hill.

## Using block trains is the key

"The key to our success with rail is the use of block trains, and constant contact with the various rail operation departments," said Charlie. "I'm usually on the phone to State Rail in Sydney a couple of times a day, and I usually talk to each of the State systems at least once a week."

A fleet of 98 wagons is set aside for the traffic. Each wagon has been customised by fitting out with smooth floors and interior walls so that the reels are not damaged.

Despite being heavy and bulky, reels of paper can be damaged easily and have to be handled with care. Any bumps, knocks or rips can make part of the reel unusable.

"Our damage rate on the wagons is down to less than one per cent, so we're very happy with rail's performance," said Charlie.

Rail's involvement doesn't cease with the Ettamogah service. Each year around 25,000 tonnes of newsprint produced at Boyer in Tasmania also are transported by rail after being shipped across from Hobart.

The Brisbane-bound reels are railed north from Sydney, while Adelaide-bound reels head west from Melbourne.

And, in Tasmania, railways play another part in the newsprint-making business. Australian National runs the trains that bring the timber in to the Boyer mill. □



2



3



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# Clyde Motive Power



4



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5

## The railway technologists with Australia's greatest heritage

Established in 1898 and keeping pace with today's needs of Australia's greatest railways, Clyde Motive Power offers the world's best.

1. Clyde were the first to introduce microprocessor controlled diesel electric locomotives. The Australian National 2240 kW "DL" class incorporates the General Motors 60 series technology into an Australian designed locomotive that is setting new standards of performance.

2. The same technology was used in the 2240 kW GML10 dual cab narrow body locomotive supplied to Goldsworthy Mining Limited. This locomotive entered service in May 1990 hauling trailing loads up to 9000 tonnes using super series wheel slip control.

3. V/Line's "G" Class 2240 kW locomotive also incorporates super series with the 16 cylinder 645E3C series turbocharged engine; 33 are in service.

4. V/Line's high-speed requirements for passenger and freight service are provided by the 1680 kW "N"

class locomotive of which 25 are in service. These incorporate the 12 cylinder 645 series turbocharged engine and Dash 2 wheel slip control.

5. Manufacturing facilities at Clyde's Bathurst and Brisbane plants have supplied over 10,000 DC traction motors for locomotives and passenger vehicles in Australia and overseas.

6. Clyde manufactured traction motors for Queensland Rail suburban and interurban trains supplied by ABB-Walkers.

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## Three types of trains for English Channel tunnel

*A model of one of the three types of trains being built for the 49 kilometre undersea tunnel journey between Britain and France. The run is expected to take about 35 minutes.*



The large twin tunnels linking Britain and France beneath the ocean are expected to be completed later this year. They will carry three types of trains which are on order.

Eurotunnel, the operators of the tunnel, will provide a service of shuttle trains, carrying cars, caravans and lorries between terminals near Folkstone in Britain and Calais in France. The road vehicles will travel inside the largest railway wagons in Europe.

For passenger cars, caravans and coaches, there will be fully-enclosed single and double-deck wagons, each 26 metres long and 5.6 metres high. The wagons will be air-conditioned and passengers will stay with their vehicles for the 50-kilometre journey through the tunnel.

Each passenger shuttle train will have 12 single-deck and 12 double-deck wagons with a locomotive at each end. The contract to supply the 252 wagons and 38 locomotives has been awarded to the Euroshuttle consortium led by Brush Electrical Machines of Britain.

Road freighters will travel in trains of carrier wagons being built by Breda and Fiat of Italy. Each wagon

will be capable of carrying a loaded 44-tonne vehicle.

Unlike the passenger vehicles, the truck carriers will have open sides and the drivers will not travel in their vehicles. Instead, they will ride in a coach behind the leading locomotive.

Also on order are the new 300 km/h inter-capital trains that will provide international services through the tunnel linking London with Brussels and Paris. When the tunnel opens, the Brussels-London journey time will be three hours.

From 1995, the opening of the new Brussels-Lille high-speed line will reduce this journey time to 2 hours 40 minutes. A further reduction to under 2 hours 15 minutes will be achieved with the construction of the British high-speed line between the tunnel and London. This line is likely to be operational by the end of the century.

Each inter-capital train will have 584 standard class and 210 first class seats. In addition to two bar/buffet catering vehicles, each train will incorporate two compartments for families, facilities for mothers with infants and two areas dedicated to disabled passengers. Accommodation will also be provided for customs and

immigration control authorities.

With 18 passenger coaches plus a power car at each end, the inter-capital trains will be 393 metres long and have a total weight of 800 tonnes. To meet the 300 km/h maximum speed requirement, the combined output of the two power cars will be 14 MW.

This high power output represents a big technical challenge when combined with the need to operate on the different electrification systems of the three countries involved.

Train manufacturers in Britain, Belgium and France have formed the TransManche Super Train Group to design and build the new international trains. This consortium is led by GEC Alsthom in Britain and France, and includes Brush Electrical Machines of Britain and BN and ACEC of Belgium plus two French companies.

In addition to the usual power requirements of an electric railway, however, the tunnel environment will require power for a range of functions including ventilation, pumping, lighting, cooling and safety systems. □

# Grinding out the corrugations

By JIM COOPER  
Speno International Pty Ltd, Geneva

**S**uburban rail tracks in Australia can include a mixture of local light railways, true metropolitan networks and the entry lines of intercity routes. Rail maintenance on these lines is demanding, but the results are particularly beneficial. The State Rail Authority in New South Wales has under trial a rail grinder that has some special features.

Most railways practice routine in-track rail rectification. Typical

applications are: cleaning new rail, restoring deformed rail geometry, refreshing surface fatigued rail or creating special-purpose profiles. The technical and economic benefits of these operations are valid in suburban conditions too.

However, suburban tracks closely concern people - as passengers, and as wayside neighbours. Thus, the environment plays an important role - both for the effects of rectification, and for the conditions in which the operation takes place.

With their homogeneous traffic and frequent-curve layouts, suburban

tracks are particularly prone to rail surface corrugation. The result is increased noise and vibration levels. Apart from damage to the track and rolling stock, the deteriorated ride can compromise passenger revenue, and general public perceives the railway as a source of nuisance.

Many metropolitan administrations already adopt rail maintenance programs to take into account public complaints. Projected legislation in several European countries, notably Germany and Switzerland, would curtail railway noise emission severely

A LOUD HOWLING TONE IS PRODUCED WHEN A TRAIN USES A HEAVILY-CORRUGATED TRACK. THIS IN ITSELF CAN BE A NUISANCE TO PEOPLE LIVING NEARBY. OF EQUAL CONCERN, HOWEVER, IS THE DEGREE OF TRAIN VIBRATION. CORRUGATIONS IN TRACKS OF STEEL OCCUR MAINLY ALONG THE MUCH-USED SUBURBAN LINES, PARTICULARLY ON CURVES. THEY ARE A NORMAL WEAR PHENOMENON. THE PROBLEM IS EFFECTIVELY DEALT WITH BY EFFICIENTLY GRINDING THE RAILS BACK TO A TRUE CONFORMATION. STATE RAIL IN NEW SOUTH WALES HAS ON TRIAL SUCH A GRINDER, OR RECTIFIER, WITH SOME SPECIAL FEATURES.

## STRENGTH

## ALUMINIUM RAIL WAGONS DELIVER



James 5148C

# TRACKS

The RR16M-8 Rail Rectifier is fitted with 16 rail-grinding units.



► and give legal backing to environmental pressures.

At the same time, suburban tracks present specific difficulties for rail maintenance operations. The generally enclosed nature of the tracks renders work conditions sensitive.

From its experience on metros in Europe and Asia, Speno International of Geneva, Switzerland, has developed a range of machines with features that permit trouble-free operation in built-up areas. The first machine of this type in Australia landed towards the end of last year. Known as the RR 16M-8, the new Rail Rectifier will be exploited under service contracts by Speno Rail Maintenance (Australia) of Perth.

First user is the State Rail Authority of NSW which foresees that such a machine would be equally suitable for country coal lines as for full metropolitan conditions.

The RR16M-8 is a permanently coupled three-car unit with an overall

length of 23 metres. All-up weight is 56 tonnes. The machine is fitted with 16 grinding units, each of 15kW, and incorporates measuring equipment for the rail's longitudinal and transverse profiles. Prime power for traction and grinding is from a 350kW diesel engine.

Taken from a series, the RR16M-8 has been adapted for Australia. The structure gauge is based upon local clearances and the machine is designed for three track gauges: 1067mm, 1435mm and 1600mm. A double-roof and air conditioning will do their best to cope with the Australian summer.

## Special features

The RR16M type rectifier incorporates features that are of particular value on suburban tracks. The carrier vehicles of a rail rectifier play a direct role in overall performance. Ideally, the vehicles should assure maximum transport

speed and minimum parking length – a contradiction. To break out of this situation, Speno International innovated in the construction of rail rectifier vehicles. The latest generation of the company's machines features a single suspension. Basically, the grinding vehicles have a wheelset at one end, and a bridging drawgear at the other.

The solution visibly offers a saving in length – two to three metres per vehicle. Smaller radius curves can be negotiated. However, a more important advantage for rectification operations is the geometry of the single-suspension in curves. Curve throw is much reduced. With a single-suspension construction it is possible to lower grinding trolleys directly onto the rail in any curve without sending a man down to check their position.

Thus, the machine can run right to site at travel speed before adopting the grinding configuration. Not having to stop on straight track en route to prepare for grinding means the final approach to site can be three

to four times faster. Valuable shift time is spared. A grinding supervisor of a large European network expressed the opinion that curve set-down could make a saving per kilometer of finished track of 10-15 per cent on some lines. And an Asian metro engineer found that a few metres less machine length permitted parking some 30km closer to one site.

The operational advantages of the single-suspension have been achieved while fully respecting the machine's running speed. Full running trials have revealed no anomaly.

A particular difficulty when rectifying suburban tracks is the high density of special applications and obstacles such as switches, crossings, and signalling equipment. To ease the operator's task the grinding operation in these areas is computer-assisted. Commands for grinding unit movements are memorised with a geographical location that ensures automatic repetition. Similarly, patterns of grinding angles and pressures are available on simple call-up procedures so as to speed up interventions.

As suburban tracks often comprise a gauge corner lip on the low rail, the RR16M-8 is fitted with four special grinding units that operate from vertical to 70 to gauge side. They complement the normal units that work from 20 to gauge side to 30 to field side. These units are fitted with specially-formed grinding wheels which allow working through switches at 70 from the vertical while clearing a 70mm high raised check rail.

Inspecting the progress of rail rectification is difficult on suburban tracks. Lineside obstacles impede descent from the cab during the work. And dense traffic and poor curve visibility increase the danger of rail inspection at the end of the shift. Thus, the RR16M-8's wide visibility end windows and in-cab indications of the longitudinal and transverse rail profiles are particularly useful.

Designed to work in built-up areas, the RR16M rectifiers incorporate special features to control work nuisances that can adversely affect operating personnel and the public.

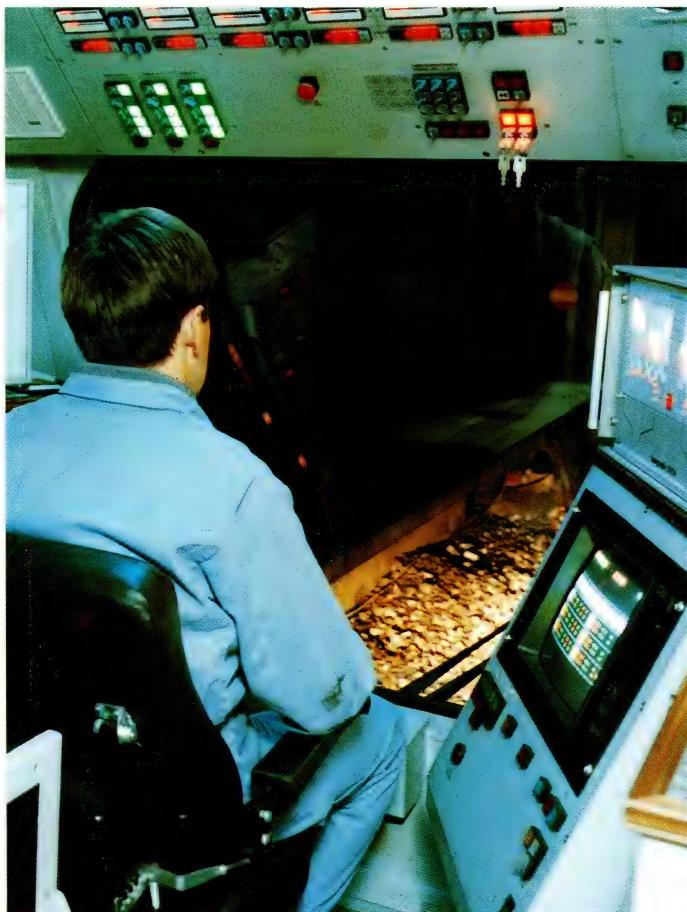
The main objective is to guarantee correct cab conditions. Operating staff are permanently exposed to machine nuisance and need the best protection. Also, efforts are directed at improving conditions near the machine so that the occasional nuisance to track workers is reduced.

### Machine operating noise

First design target was to reduce machine operating noise to the values specified for rail rectifiers by Japanese Railways (JR), the most severe: i.e. in cab: less than 78dB(A); and at 25m: less than 76dB(A).

An analysis of rail rectifier noise showed sources that are common to most trackwork machines: thermic engineer, air movement and mechanical movement. An intense design campaign dealt with each machine noise source in turn. A noise suppression package of classic solutions was applied: flexible mountings, air mufflers, absorbing panels and floors and containment shields. Practice showed that the JR values were very demanding. They

*The cabin of the rail rectifier provides a clear view of the track and is equipped with computerised monitoring gear.*



James 51480

# DESIGN SUPPORT

## ALCAN DELIVERS

ALCAN

# TRACKS



*Corrugations along a length of steel suburban track.*

could only be achieved by unexpected over dimensioning and rigorous attention to detail.

Second problem to be tackled was dust, a specific problem of rail rectification. The elements are not toxic. But they are an obvious physical irritant. After various inconclusive tests with deflectors and steam and water barriers, Speno International decided that dust collection equipment with evacuation was the most practical solution.

Guideline design performance was based upon the French government limits for average exposure of 10mg/m<sup>3</sup> of total dust and 5mg/m<sup>3</sup> of breathable dust.

A set of four grinding units over one rail is fitted with a single container housing. Spark velocity is checked by water-cooled plates. An updraft is formed by a 7.5kW ventilator. The dust is filtered in two stages:

- By a cyclone chamber where heavy particles drop directly into a recovery box
- By a battery of self-cleaning flat bag filters.

Each collection unit retains some 120kg of dust per shift.

Official tests in Paris showed cab dust concentration did not exceed 0.6mg/m<sup>3</sup>; that is about one-twentieth of the limit value. Also of interest is the improvement of the environment around the machine. Track personnel are not inconvenienced in the proximity of the rectification site. Even after working in small-gauge tunnels for several hours, the machine remains generally clean. Maintenance work is thereby reduced.

The various environmental protection measures introduced by Speno International have rendered rail rectification more attractive through overall cost savings: track ventilation can be left shut down during rectification operations, station cleaning has been eliminated. Crews too have benefited.

A secondary effect of the dust collection has been better spark control. The updraught has little affect on hot particles that leave the rail and grinding wheel with velocities

up to 50m/sec. However, the air current results in forced cooling of the grinding equipment, and allows the container box to be fitted more tightly at the point of spark generation.

## Noise and vibration

Noise is unwanted airborne sound. Sound has a wide range of levels and is expressed in decibels. The scale is logarithmic with units wider apart at the low values. However, the human ear perceives sound more or less intensely depending on its frequency. Thus, perceived sound is weighted according to frequency and the units become dB(A). An increase of noise intensity of 10dB(A) is felt as a doubling of the noise level.

Dr Stuber of the German Federal Railways states: "Travelling over rail with short wave corrugations (0.04mm deep and 4.5cm long) produces a howling tone that is some 15dB(A) louder than the noise of travelling over rails in normal condition. A more frequent treatment of the rail surface would be desirable – without short waves necessarily being present – as already the rough surface of the rail causes a 5dB(A) increase in noise levels."

Dr Walker of Southampton University confirms: "The best method of noise control is to reduce the noise at source, using carefully designed and maintained equipment. For example, rail corrugations can increase noise levels by as much as 10 to 15dB(A); every effort should be made to eliminate them by rail grinding and regular track maintenance."

Vibrations are groundborn oscillations that affect the track and even wayside buildings. They too are expressed as a level in decibels. Mr J. Jougle of the Paris Metro Authority has defined rail rectification as the basic remedy for vibration problems. Mr Jougle explains: "Rail grinding is practiced by almost all metropolitan administrations. It has a double purpose:

- Applied periodically, typically once every two years, it can regenerate the rail surface over the whole network;
- Applied locally, even once every six months it eliminates corrugation.

The improvement in vibration levels by the regeneration action can be 3 to 4dB. The removal of corrugation can result in an improvement of 10dB. □

# \$4 million computerised national rail booking system

**B**y the end of this year Australia will have a new airline-style reservation system for rail travellers which will allow travel agencies to make direct computer bookings and which can be accessed through airline reservations systems.

New South Wales State Rail, Queensland Railways, Australian National and Westrail signed an agreement to proceed with the \$4 million project at a recent meeting of Railways of Australia Commissioners.

The new reservations system is known as TRAINS (Train Reservations Accounting Information Network System).

The development and capital cost of the national network is seen as an essential investment to significantly benefit customer service.

The technology of the new computer system is the same as that used by Qantas for their reservations, and is being set up by Quadrant International Pty Ltd, which is a Qantas Information Technology (Qantek) joint venture with DMR Group Australia.

TRAINS will be hosted by Qantek's main computer complex in Sydney and will use Qantek's Australian communications network which is one of the country's largest.

The software was developed by British Rail and chosen after careful evaluation of several systems considered to be world leaders.

Extension of the system through airline offices to enable it to take in overseas bookings will benefit Australia's rail tourist industry. Rail passengers will be able to confirm bookings quickly and easily, and will receive more accurate information on all their travel enquiries.

At present there are four separate and incompatible rail reservation systems throughout Australia. TRAINS will replace these so all Australian rail services are on the one system. □

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# TRACKS



AUSTRALIA AND INDIA SHARE A COMMON HERITAGE IN THE FOUNDATIONS OF THEIR INDUSTRIAL DEVELOPMENT AND IN THE ORIGINS OF THEIR RAILWAY SYSTEMS DESIGNED TO TRAVERSE VAST DISTANCES UNHEARD OF IN THE UNITED KINGDOM AND SMALLER EUROPEAN COUNTRIES. THE TWO COUNTRIES HAVE MUCH IN COMMON IN THEIR CULTURAL AND COMMERCIAL EXCHANGES, THEIR POLITICAL AND LEGAL SYSTEMS, AND SHARE THE TRADITIONS OF BRITISH INFLUENCE WHICH LAID THE BASIS FOR THEIR NATIONAL INDEPENDENCE. TODAY, AUSTRALIA AND INDIA REMAIN IMPORTANT MEMBERS OF THE BRITISH COMMONWEALTH OF NATIONS. IN THIS ARTICLE —

**MICHAEL SCHRADER**

— CONTINUES HIS TRAVELS WITH A REVEALING INSIGHT INTO THE SURVIVING NARROW-GAUGE INDIAN RAILWAYS WHICH PROVIDED THE MEANS TO ESCAPE THE SUMMER HEAT OF THE PLAINS.

# The great of

*Rail motor car Shivalik Queen rests in the Shimla servicing shed prior to its downhill run — with the Himalayas as a distant backdrop.*

In the tourist literature, and on the picture postcards, they are referred to as "toy trains". It is not hard to understand why. As they claw their way upwards into the rugged grandeur of the Indian foothills, they do look just like little toys.

In today's Indian transport scene, they are no more than that — small toys, in an increasingly competitive transport world, doing a very small task. But they are relics of a great past, and fascinating for this reason. They form part of the legacy of the British Raj who, during the period in which they governed India, constructed a magnificent railway system. That system has been further developed since India became an independent nation in 1947.

Within that network survive a number of narrow-gauge railways, built for a purpose dear to the heart of the colonising English. They provided a means of escape from the summer heat of the Indian plains, to Hill Stations, where the altitude brought a cooler, fresher climate.

The Hill Stations themselves were developed well before the advent of railways. To serve them, "cart roads" were carved out of the hillsides, allowing passage of "ekkas" or country carts, bullock carts for goods, and a "tonga" (two-wheeled pony cart) service for mails and passengers.

In the later half of the 19th century, British inventiveness turned to the construction of railways to further improve transport to these Hill Stations. And so, residents of Calcutta were given easy access to Darjeeling with the opening of the Darjeeling Himalayan Railway in 1881. Madras was linked to the scenic Blue Mountains, or Nilgiris, with the opening of a rack-railway as far as Coonoor in 1899. Delhi was linked to Simla, with the opening of the narrow-gauge line between Kalka and Simla in 1903. Bombay residents could escape their heat to Matheran Hill with the opening of a railway from Neral, a station on the main line of the Great Indian Peninsula Railway to Poona, from 1907.

All four of these railways survive to the present day. Each has its own individuality and characteristics. The four share three different rail gauges, and two have retained steam traction. And they offer fascinating travel experiences.

# little trains India

Indeed, all Indian rail travel is fascinating, if not always luxurious.

## The Howrah-Kalka Mail

Leave the comfort of the Ashok Hotel in New Delhi, with its Indian ambience, to join the romantically named Howrah-Kalka Mail at the noise and bustle which is Delhi Main station. My accommodation is in two-tier AC Class, which is tending to replace non-air conditioned first class as a superior means of travel on Indian Railways. The interior of the coach comprises four berth sleeping compartments (in tiers of two, naturally), open sided to an aisle. On the other side of the aisle are berths longitudinal to the carriage, also in tiers of two. Bed rolls, with clean sheets a blanket and a pillow are on hire for the night at five rupees — about 50 cents.

The Mail reaches Kalka, lower terminus of the line to Shimla (as it is now spelt), at 6.00 am. At this time, in the Indian winter, it is pitch black. At the northern end of the platform, for Shimla passengers, two trains wait — the diesel-hauled passenger train, and the Rail Motor Car, which is faster, and commands a premium fare.

A product of the Drewry Car Company Limited, England, of the 1920's, the Rail Motor Cars have been recently refurbished. Seating is comfortable, the interior is lined with laminate, and tinted perspex is used as a roofing material so that the views can be admired — although curtains are fitted to keep out the strong sunlight!

I am the sole passenger as the car departs Kalka at 6.35 am, into the darkness. The line to Shimla is characterised by an almost continuous succession of reverse curves, and the Rail Motor Cars have an unusual feature to assist the driver. The single headlamp, mounted on the front of the bonnet, swivels with the curvature — it is connected with rods to the leading bogie.

Darkness obscures the two sweeping loops through which the lines pass within the first 10 kilometres, but it adds to the drama at the first crossing station. There, in the night, stands the signalman beside the track, his arms outstretched in the form of a cross. In the one hand he holds the electric (safeworking) tablet to

exchange with the driver of the RMC and in the other, a flaming oil flare. The RMC's headlamp lights the entire scene, and the tablet exchange is successfully carried out.

The present route of the Kalka-Shimla railway was chosen in preference to a shorter one, which would have been rack operated. Its engineering features are extraordinary. Apart from the curvature, there are kilometres of stone walls, stone and brick viaducts, and tunnels — over 100 in total, aggregating eight kilometres in length.

The sun rises around 7.15 am, and the driver switches off the interior lights to allow me a better view from the RMC. However, religiously, whenever we approached any tunnel, no matter how short, the lights go back on again.

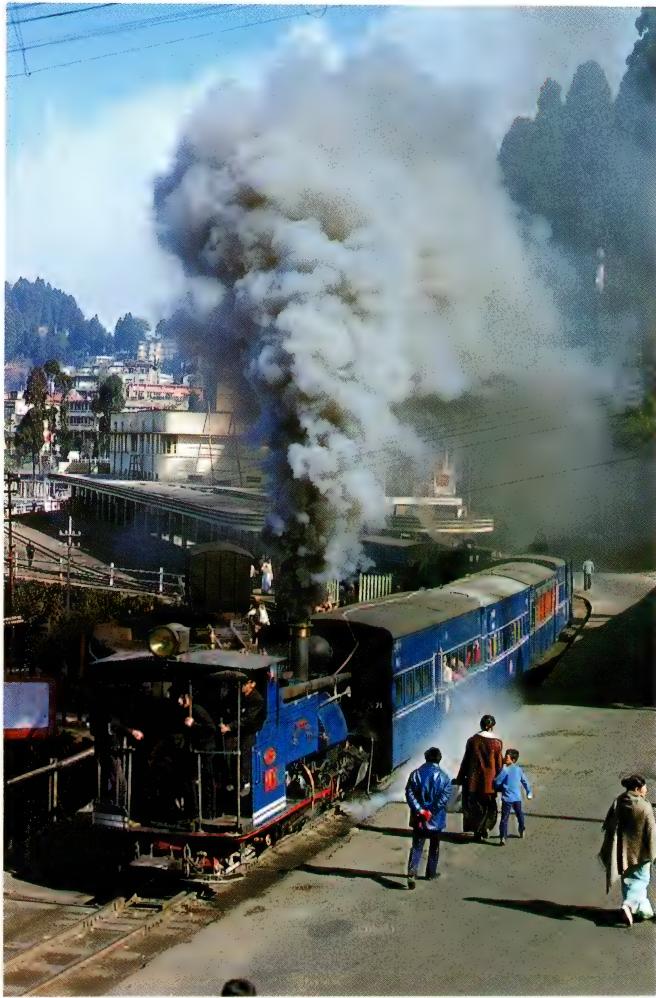
In its first 40 kilometres, the line climbs over 900 metres to Kumarhatti, at 1578 metres above sea level. Just below it lies Dharampur, location of a Northern Railway Engineering School, and a military barracks. As she journeyed upward in her tonga in 1876, Lady Lytton, the Vicereine, commented "We all felt better on reaching Dharampur, where the air was quite cold, and there were fir trees, and I heard a cuckoo, to my joy". The air is still cold, the Himachal pines are also there, but so are Australian eucalypts to make the antipodean remember his home. On the final climb to Dharampur is a spectacular series of three balloon loops.

After passing through the longest tunnel on the line 1,143 metres the railcar arrives at Barog. An attractive verandahed refreshment room offers breakfast of omelettes, bread and tea. The line descends a little on somewhat easier grades and curves, passing Solan, the home of one of northern India's best-known breweries, which is right beside the line. Glimpses of snow on the far Himalayas are now coming into view.

As we approach tunnel number 52, I look through the front window of the RMC, and notice a large shape lumbering along inside, its gait distantly reminiscent of a kangaroo. It turns out to be a very large baboon — of which there was a big colony on the tunnel wall as we emerge.

Shimla itself comes into view as the train approaches Tara Devi, around 80 kilometres miles from Kalka.

# TRACKS



## Shimla a little ahead of time

We reach Shimla a little ahead of time, at 10.35. In the main platform, the "Himalayan Queen", the main passenger train on the line, waits departure; the RMC skirts round it on the loop line, and comes to rest at the far end of the platform. A porter carries my bags on the 20-minute walk to the Government-run Holiday Home Hotel, at the far end of the town.

On the occasion of my visit, Shimla, often snow-covered in winter, was sunny and surprisingly warm. The evidence of the British Raj is strong, with fine Government buildings lining the narrow streets. There are sweeping views from Shimla's mall, or maidan, from which Indians once were barred by the English colonists. A taxi ride to Wildflower Hall, the original summer residence of Lord Kitchener, Commander of the Indian Army, brings a spectacular view of the saw-toothed Himalayas in the distance, glistening under white snow.

Two days later, my journey down the hill was made on the Himalayan Queen, sitting in the first class chair car.

Much slower than the railcar, the train allows plenty of time to appreciate the scenery over the 95 kilometres into the valley. We stopped at Tara Devi to cross the uphill passenger train, and there was time to walk around the curve to look at the adjacent tunnel mouth. There, in the middle of the track, stood two railway workers with a large mirror. They were directing the sunlight from the mirror into the tunnel itself, where a track gang was at work on maintenance. Economical! And not seen elsewhere. As the Himalayan Queen passed through the tunnel, the two resumed their position, and the light from their mirror reflected strongly on the walls of the tunnel.

A curry lunch on tin trays was served at Barog, and as we descended through gathering smog, the loop construction on the line was clearly revealed.

Our train reached Kalka within five minutes of the scheduled time, which allowed 15 minutes for



The morning train (far left) leaves Darjeeling station en route to Siliguri. Snaking along the hillside (centre above) below the "cart road", the Darjeeling train nears Tindharia, with external train crew and freeloaders. The Batasia Loop (top right) is a famous vantage point just outside Darjeeling. The "Himalayan Queen" (left) takes on passengers at Dharampur. Pride of the Darjeeling fleet "Mountaineer" (right) waits at Siliguri Junction before making the climb.



a change to the broad gauge connecting train for Delhi. The air-conditioning in this connecting train must be a boon in the Indian summer. But AC chair cars have small windows, and the view is not good — even if the windows were clean. The three-plus-two seating arrangement makes looking out even more difficult.

Provision of food on long Indian journeys is important, and I had my first introduction to a technique recently adopted by Indian Railways — the establishment of centralised kitchens to provide food which is carried on board trains in aluminium foil covered containers for sale to passengers. "Omelette and bread with it" said the bearer, in response to my query on contents, and that is just what it was. With a box of fruit juice drink, and tea served from a plastic thermos jug afterwards, the meal came to less than one dollar.

In contrast, the first class air-conditioned sleeping cars on the Rajdhani Express, one of India's crack trains linking Delhi with Calcutta, are luxurious. The coupe which I shared was spacious, with wide windows, plenty of room for luggage under the seat, a small hand basin in

the corner, and flowers in a brass vase on a fold up table. Announcements in both Hindi and English were made over the public address system about the train's departure, and the names of the train manager, the catering superintendent and the staff on the train. Shortly after that departure into the gathering dusk, two small portable tables arrived in the compartment, followed by a service of pot of tea with samosas. An evening newspaper was also delivered.

Then, around 8.00 pm, a dinner menu was offered, and the meal itself arrived some 30 minutes later, served from the adjacent pantry car in the same way as the tea. An excellent meal unaccompanied, alas, by ales or wines. Alcohol is not served aboard Indian trains. Maximum speed of the electrically-hauled Rajdhani Express is 140km/h, and the riding quality is very acceptable.

From Calcutta, the Darjeeling Mail provides an overnight link to New Jalpaiguri, the lower terminus of the Darjeeling Himalayan Railway, now part of India's Northeast Frontier Railway.

# TRACKS



*Making the most of natural light fettlers use a mirror to illuminate the Tara Devi tunnel where a track gang is working.*

The larger of these, the Great Zig-zag near Lithgow, has now been reopened as a tourist railway.

On the Darjeeling Himalayan Railway operation through the Z-reverses is simple and without ceremony. The uphill train steams into a dead-end on the lower leg of "Z", and a member of the train staff throws the points behind it. The locomotive then propels its coaches up the middle leg, to the "top points". These are thrown over after the train reaches the top, and the uphill journey continues.

The two-feet (600mm) gauge line is entirely steam worked by the Class B O-4-O saddle tank locomotives, introduced in 1889. The oldest survivor was built in Glasgow Scotland in 1892, and the youngest member of the fleet dates from 1925.

In recent years, the railway has been beset with problems. There has been terrorist activity in the northern areas, and foreigners still require a permit for travel by train through New Jaipalgora to Darjeeling. Landslides are a constant menace, and the line has been closed frequently, sometimes for many months at a time. Indeed, on the day on which I arrived at New Jaipalgora, no trains ran for this reason. I therefore made my



## The Darjeeling Himalayan Railway

Of all the four little trains, this is probably the best-known. It has featured widely in film and television, and its upper terminus is justly famous for its fine teas. And, of course, it was the first of India's four toy trains — to that extent, it set the pattern.

The character of the line is quite different from that of the Kalka-Shimla Railway. There are no tunnels, no viaducts, no miles of stonework providing a stable right of way on the hillsides. Essentially, the line follows the previously-existing cart road up to Darjeeling, but it has engineering features peculiar to itself. Two stand out: Z-reverses, or zig-zags, total five in number, and there are four spiral loops, where the track passes over itself on its upward climb.

Z-reverses provide a comparatively inexpensive way for a railway to gain altitude in mountainous terrain. The Indian author, R.R. Bhandari, tells a fanciful story about the origin of the Z-reverse.

*"...the engineer engaged received his first set-back. A deep erosion in the hillside made it impossible to employ a gradient within the limits of rail-transport. There seemed to be no alternative but to admit failure, and this, so the story goes he was ready to do when his wife saved the situation. 'Darling', she suggested, 'if you can't go ahead, why don't you come back?'*

Perhaps the "wife" had been to Australia, where two very much larger Zig-zags had already been constructed on the main line over New South Wales' Blue Mountains.

## The oldes

first uphill journey to Darjeeling in a "shared taxi", and had the opportunity to observe the total transport task, in which the train today plays only a minuscule part.

The load for the steam locomotives is now restricted to three vehicles — one first class coach, one second class, and a brakevan. Currently, there is one train each way daily, with a short working from Kurseong to Darjeeling and return. In contrast, my journey by road showed me the frequent service of shared taxis (typical load: seven plus driver in an Ambassador, a locally-built version of the 1950's Morris Oxford); fully laden buses struggling up the hill road; motor trucks conveying all the freight. So, "toy train" it really is — but any moves for closure bring strong local resistance.

My three nights at Sinclairs Hotel in Darjeeling gave me the chance to see the railway in some detail, and during that time I had the good fortune to ride uphill between Kurseon and Darjeeling in a special train conveying the retiring chairman of the British Railways Board, Sir Robert Reid, on a visit.

From its lower terminus at New Jaipalgora, the Darjeeling Himalayan Railway makes a wide nine kilometre sweep into Siliguri, junction for the metre-gauge lines in the area. Over flat terrain, it continues to Sukna, the first watering point and the commencement of the climb. And climb it is



If you can not go ahead... a DHR B-Class tank engine propels its train backwards through the middle road of a "Z" reverse which is bisected by the main road.

— continuous, except for one or two level spots at stations, all the way to Ghum, 65 km. In the downhill direction, trains steam hardly at all — and the taxis switch off their engines and coast in neutral!

The first spiral is located 18 kilometres from New Jaipalguri, and, after an intermediate pause for water, the first of the Z-reverses follows. The Railway's workshop is located at Tindharia, at an altitude of 860 metres. The line makes a

Serious injuries, even fatalities, have occurred when these non-paying free-loaders have been hit by passing motor traffic.

The line really has the character of a tramway, as it passes down the main streets of villages such as Sonada, Ghun, and Kurseong. In the busy morning "peak", as the Down train leaves Darjeeling for New Jaipalguri, it is frequently held up in traffic jams — long lines of trucks, buses, horse vehicles and private motor cars. Certainly,

## Built in Glasgow in 1892

complete circuit of this on its extensive climb through the village. Just uphill lies the third of the loops, known as "Agony Point" — and the climb upwards to Kurseong is interspersed with more Z-reverses.

Ghum is the highest point on the line, at 2,258 metres above sea level. From here, the journey into Darjeeling is marked by the spectacular Batasia Loop, constructed in 1919 to ease the 1 in 20 gradient on the descent to Darjeeling itself. Today, the loop is a well-known tourist point and holiday makers gather to watch the train on its climb. On a clear day, the peak of Kanchenchunga in the Himalayan Mountains provides a spectacular backdrop.

Operation of the trains themselves is, to say the least, interesting — as well as very expensive. Each locomotive has a crew of five — driver, fireman, coal shoveller, and two standing at the front, sanding the tracks for better adhesion! A brakeman operates on the roofs of the coaches — there is no continuous brake.

The proximity of the railway to the cart road, now the main road to Darjeeling, creates its own problems. The line crosses frequently from one side of the road to the other, creating a potential hazard for the trains and for the traffic which uses the road. From village to village, trains are often followed by groups of pleasure-seeking youths riding on the skimpy running boards.

there is no shortage of varied experiences for the traveller who chooses to visit Darjeeling by rail.

At the conclusion of it all, the teeming city of Calcutta provides a natural point from which to begin further travels in India, or to conclude them. And in Calcutta itself, the luxury of the Oberoi Grand Hotel offers a welcome oasis.

Two other "toy" mountain railways in India deserve a mention. (There are thousands of kilometres of light, narrow-gauge, railways, in most parts of the country.) The Nilgiri Railway is a metre-gauge line, 46km in length, linking the plains north of Madras to the hill resorts of Coonoor and Ootacamund. There are 16 tunnels and a 19 kilometre section with gradients of 1 in 12½, equipped with the Abt rack system, and worked with Swiss-built steam locomotives. The railway was featured in the movie film *A Passage to India*, and demonstrated its scenery to the full.

Shortest and youngest of the lines, the Matheran Light Railway climbs 19km from Neral to Matheran. Now diesel-operated, it is notable for its four-wheel brakevans and other rollingstock, which are shunted by hand at the termini. Its only tunnel, "One Kiss Tunnel" gives a couple — so they say — just sufficient time for one kiss.

But, the full story of these two lines must wait for a future Network. □

# WINDOWSEAT

## NEW RAIL TRAVEL VIDEO

A new video which provides glimpses of the high standard of accommodation and meals aboard Australia's inter-capital and transcontinental trains, as well as promoting tourist attractions, has been produced by Railways of Australia (Services) Pty. Ltd.

It runs for 13 minutes and copies will be made available for use by travel agents in Australia and overseas. The overseas version is a minute longer to provide information about Australpass and the Kangaroo Road 'n Rail Pass.

These two passes facilitate flexible and more convenient travel arrangements for overseas visitors.

The video is available with English, German or Japanese narration and was made for ROA by Inform, a Sydney production company.

## PRESERVING NATIVE VEGETATION

The reserve areas of land running along the sides of railway tracks have become important in the study of native grasses and flora. Such a study of 1,400 kilometres of railway reserve has commenced in Western Australia.

It is being financed initially by a \$20,000 grant from the Federal Department of the Environment and will concentrate in the central and southern regions.

The study aims to identify species of native vegetation along the railway reserves which will assist in the development and preservation of some rare species.

Westrail's landscape manager, Peter Bothwell, says: "It is important that we have a good knowledge of the type of plants which are best-suited to the range of conditions which occur along the lines.

## TRIBUTE TO QUEENSLAND VOLUNTEERS

Members of the Queensland Division of the Australian Railway Historical Society and the Grandchester Progress Association co-operated last year in helping to celebrate the 125th anniversary of Queensland railways.

Their efforts contributed substantially to the success of the triple-headed steam train excursion at Grandchester, highlight of the celebrations.

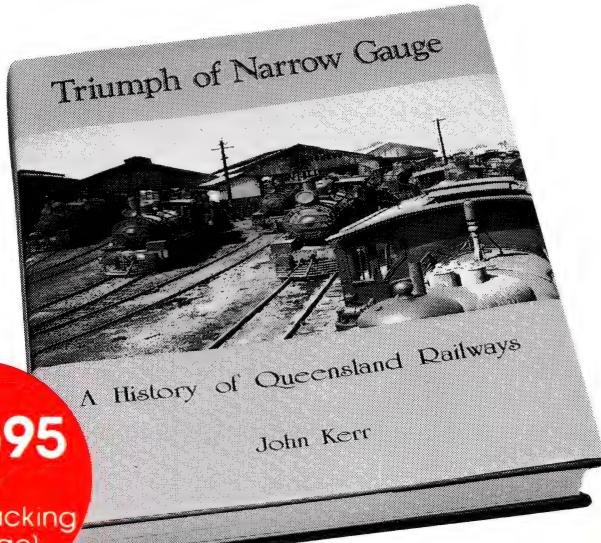
The volunteer members of both groups demonstrated what can be achieved when a mutual interest is shared and a project undertaken without thought of great financial reward. Their efforts were an example to similar groups throughout Australia.

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## MINISTER AND HIS NAMESAKE

The first of 14 new EL-class locomotives delivered from the A Goninan and Co yards in New South Wales to Australian National Railways has been named Bob Brown after the Federal Land Transport Minister.

Mr Brown attended the recent launch of the locomotive at the Islington Freight Centre in Adelaide.

A Goninan and Co's chief executive, John Fitzgerald, said the Dash-8 EL locomotive was the culmination of a \$550 million program from 1983 to 1988 to produce the best diesel electric locomotive in the world.

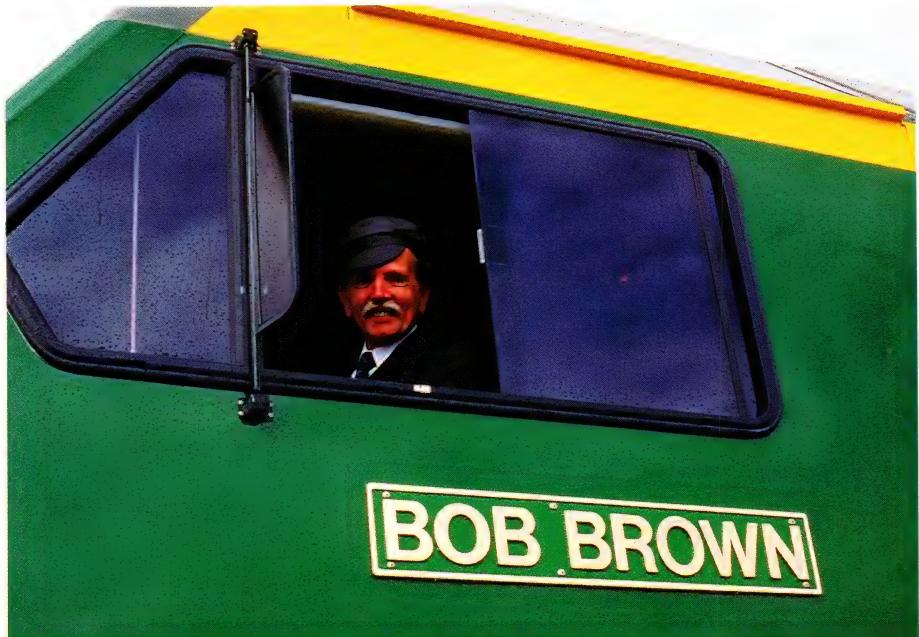
The EL-class locomotives, built by Goninan, are being delivered to AN at the rate of one a month.

## NEW JOB FOR FORMER AN COMMISSIONER

**A** Commissioner on the Australian National Railways Commission for five years from 1975 to 1980, Mr Colin Freeland, AO, aged 57 years, has been appointed by the Federal Government to the Board of the Australian National Line (ANL) Limited.

Mr Freeland has been the Chief Executive and Managing Director of the Civil Aviation Authority since June 1988. Previously he was Secretary to the Federal Departments of Transport, Aviation, and Housing and Construction.

Mr Freeland was awarded Officer of the Order of Australia (AO) in 1988 for public service. He is a Fellow of the Institution of Engineers (Australia), and a Chartered Engineer (Australia).



## NZ HONOURS

### NSW RAIL EXECUTIVE

**C**hief Executive of NSW State Rail, Mr Ross Sayers, has been awarded the New Zealand 1990 Commemoration Medal in recognition of his services to rail in that country.

The medal is awarded by the Queen and recognises New Zealand's Sesquicentennial in 1990. It is given to people who have made a 'significant contribution to the wider community.'

At a presentation ceremony in Wellington Mr Sayers was praised for his contribution to New Zealand railways. He effected substantial improvements in efficiency, customer service and financial management.

### \$8m PROFIT

#### FOR AN

**A**ustralian National Railways made a record profit of more than \$8 million in 1989/90 with all sections of its operations performing strongly. The freight division made a profit of \$10.96 million - an increase of almost \$2 million on the previous year.

AN's passenger division recorded a deficit of \$2.9 million

(down \$2.7 million on the previous year).

Australian National's Tasrail made a profit of \$60,000 (compared to a deficit of \$3.9 million in the previous year).

Federal Land Transport Minister Bob Brown said: "With good management and efficient work practices this proves that rail can compete and win freight from other transport modes."



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QR 704



A 3900-Class electric locomotive hauls a freight train through the Eumundi Range north of Brisbane.

## QUEENSLAND RAIL TURNS IN GOOD RESULT

New peaks for freight and revenue earnings in 1989/90 have given Queensland Railways a good result for the year. Freight haulage at 82.5 million tonnes set a new Australian record.

Total freight exceeded the previous year's figure by two million tonnes. Coal railings of 67.8 million tonnes increased by 1.8 million tonnes and were the highest single-commodity tonnage achieved by an Australian railway, including the privately-run mineral railways of Western Australia.

Apart from coal, rises in other minerals, wheat, raw sugar, sugar cane, cotton and cotton seed contributed to the freight record.

Revenue earnings were \$1145 million, an increase of 3.6% on the previous year.

Although freight operations provided a huge proportion of QR's total revenue, general freight and livestock, as distinct from bulk traffic in train loads, lost \$480 million when 1989/90 capital servicing charges were taken into account.

A number of initiatives being put into place to address this situation include increased integration between rail and road transport.

Reflecting the absence of Expo 88, passenger journeys State-wide totalled 44.1 million, a decrease of 6.8 million on 1988/89. The absence of the Expo 88 factor also is reflected in country passenger journey numbers, down 8.2%.

Nevertheless, patronage on the Brisbane-Rockhampton corridor increased by 90% following the introduction of the electric Spirit of Capricorn in July, 1989. This train has cut more than three hours off schedules between Brisbane and Rockhampton.

It provides the longest electric passenger service in Australia - 630kms.

Improved efficiencies helped restrict QR's rise in working expenses to 4.2%, which is well below the inflation rate of 7.7% as measured by the CPI. Working expenses were \$975.2m.

Debt service charges of \$235 million in 1989/90 had a significant impact on the overall cash deficit of \$133.5m, which compared with a deficit of \$126.7m the previous year. Main line electrification absorbed a significant component of the debt servicing. This project, completed in 1989, is generating considerable operational and maintenance savings. □

## ROADRAILER MAKES STRONG IMPACT

**A**ustralian National's RoadRaider, a road vehicle which in a few minutes converts to rail haulage, is receiving strong industry endorsement, according to Melbourne-based sales manager for the units, Esmond Fernand.

Two RoadRaider sent to New South Wales on a demonstration run and exhibited at a trade packaging show received an enthusiastic response from the trade, he said.

"There were many questions as to where and when AN will be operating RoadRaider and at what rates," Mr Fernand said. "Another positive sign of interest is the fact that we have been approached by the Australian Institute of Materials Management with a suggestion we enter RoadRaider in their annual Materials Handling Awards competition."

The RoadRaider was launched officially in Australia last year at the Islington freight terminal in South Australia. AN has sole marketing rights in Australia. Units now in operation were made under licence to AN by Maxi-Cube Fruehauf in Victoria.

The Federal Government has said national freight haulage during the next decade will double creating new opportunities for rail transport and intermodal vehicles such as the RoadRaider.

## USA TO HOST SYMPOSIUM ON ATC

**T**he first international symposium on Advanced Train Control (ATC) technology is to be held in Denver, Colorado, from 17 to 19 June 1991.

As advanced control systems have become technically feasible, several pilot applications have been launched in Australia, North America, Europe and Japan, all of which are decisive for the future prosperity of railways.

The symposium, co-sponsored by the Railway Progress Institute, the Association of American Railroads and the Transportation Research Board, will address the technical, commercial and economic issues surrounding ATC systems.

It will also explore how other industries are implementing similar technologies and how ATC systems can meet the need of the transport market.

For further details: The Railway Progress Institute, 700 North Fairfax Street, Suite 601, Alexandria, VA, USA 22314-2098.

## INDIAN-PACIFIC NEXT FOR A FACELIFT

The Indian-Pacific train which traverses Australia east-west is likely to be next in line for refurbishing and single-operator management following the success of The Ghan (Adelaide-Alice Springs service) in taking out the Australian Travel Industry Association's top award for excellence.

Already expressions of interest have been called for upgrading the Indian-Pacific to a standard at least equalling that of The Ghan.

A number of design concepts may also be reviewed depending on the outcome of discussions with the State authorities on corridor management of the IP service.

Australian National Railways' Passenger and Travel general manager, Graeme Templer, says: "The Ghan's success shows that single corridor management of the Indian-Pacific could work equally as well." The corridor concept involves management of a train by a single authority across State systems.

## PASSENGER FIGURES BEST IN 35 YEARS

More than six million passengers travelled on V/Line services last financial year, the highest level for 35 years. This represents an increase of 4.2 per cent over the 1988/89 figure and continues an unbroken growth pattern achieved by V/Line over the past nine years.

Since the early 1980s \$160 million has been spent in Victoria on new, comfortable carriages, more powerful locomotives and upgraded station facilities.

The biggest patronage increase was recorded on interstate services which rose by an impressive 11.2 per cent to 30,000. This was due mainly to the airline dispute between August 1989 and March 1990.

More than 2.1 million people



The EL-51, now operating the Indian-Pacific service, arrives at the Adelaide passenger terminal, Keswick.

coach services an increase of 4.9 per cent while commuter services carried 3.3 million passengers, a 2.4 per cent increase. New services, such as the Sun Link co-ordinated rail and road coach service between Melbourne, Bendigo and Mildura, introduced during 1989/90, have proved popular.

## TWIN CITY TRANSIT STARTS

Twin City Transit aims to give people in Wodonga and Albury an improved local community public transport system by introducing a number of improvements to the system linking the NSW-Victoria border cities.

These include a new simplified fare system, revised routes, new services to developing areas in east and west Wodonga, direct access to Wodonga Plaza Shopping Centre, publication of a comprehensive timetable and erection of bus stops and passenger information boards.

"These improvements are the result of a review the V/Line arm of the Public Transport Corporation carried out on the public transport needs of Wodonga and links to Albury," said Geoff Smithwick, V/Line's Business Development manager.

"This review was carried out in conjunction with the operators, Mylons Motorways, and in consultation with local councils and other interested parties."

## VFT PROJECT LOSES FINANCIAL SUPPORTERS

The Very Fast Train (VFT) project for an express rail service between Sydney and Melbourne has lost the financial support of two of its joint venture partners, Elders IXL Limited, and TNT Australia Pty Ltd.

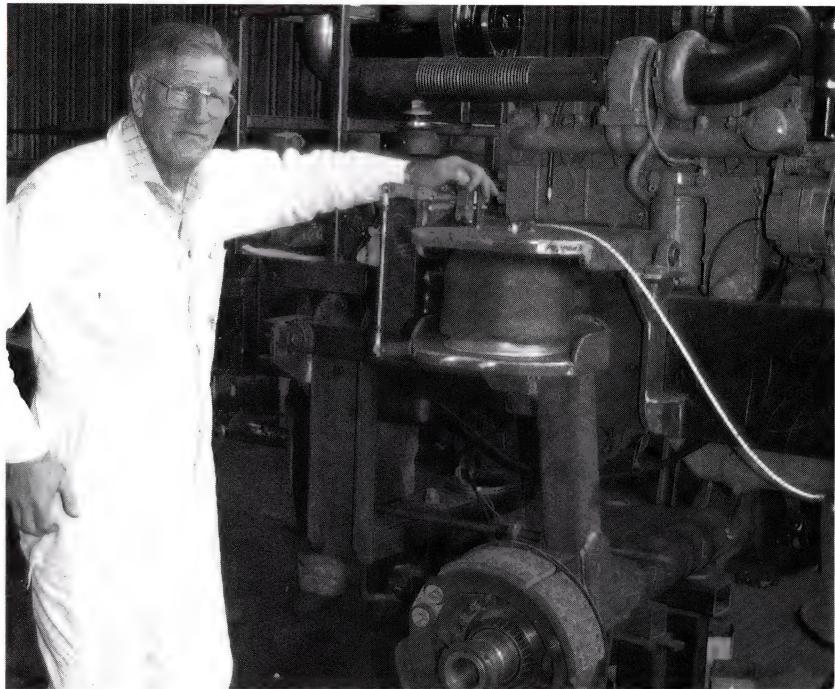
Public Relations Manager for the project, Neil Travers, has confirmed that in terms of funding, only The Broken Hill Proprietary Co Ltd, and Kumagai Gumi Co Ltd, remain active.

However, he says the \$18.9 million feasibility study is two-thirds complete, all four partners to this stage have shared costs equally, and the financial commitment of the remaining joint venturers ends with completion of the feasibility study.

No approach would be made for government funding, he said. The \$6 billion project would remain exclusively a private venture which, if approved, would be financed through the stock exchange and the Australian and overseas capital markets. travelled on regional rail and road

## NEW PRODUCTS & PROCESSES

**Information and photographs about new products and services available from Australian companies serving the rail transport industry, particularly those relating to new technological developments, should be forwarded to the Editor, Network, Railways of Australia (Services) Pty Ltd, Level 4, 85 Queen Street, Melbourne 3000.**



Mr Bob Whitehead, principal of RFW, displays the air suspension of his new road-rail vehicles.

### New solar diesel power systems

A range of DC hybrid power systems for remote area telecommunications applications has been designed and made in Australia by BP Solar Australia Pty Limited.

The power systems combine the advantages of both solar and diesel systems to provide DC power in remote areas for applications such as powering microwave, VHF and UHF repeater stations.

Each installation consists of a diesel generator, battery bank, solar array and a programmable logic control (PLC) based control and distribution system. The system is most cost-effective for power applications in the 750 watts up to 3,000 watts range, according to BP.

The fully computerised controller used in the system incorporates features such as: automatic diesel operation; automatic fortnightly battery equalisation; battery temperature and voltage monitoring; low battery volts load shedding; automatic battery charging and overload protection.

Further information from David Skelton, BP Solar Australia Pty Limited, 1/98 Old Pittwater Road, Brookvale 2100. Telephone (02) 938 5111. Fax (02) 939 1548.

### Road-rail trucks' soft-riding suspension

**H**eavyweight road-rail trucks designed to carry steel and railway ballast are being fitted with soft-riding air suspension.

RFW Truck Manufacturing Company is fitting Air Spring Airmount cushions into the front suspension of three custom-built 23-tonne utilities for Hamersley Iron's Servicing Division at Dampier in Western Australia.

The vehicles – one three-way tipper and two through-loaders – incorporate air suspension to give the vehicles' operators extended maintenance-free durability and enhanced comfort over surfaces ranging from smooth rail to all-wheel-drive tracks.

RFW's latest road-rail vehicles are driven by a Cummins 6 CTA 8.3 diesel operating through an Allison MTB 653 gearbox with a high efficiency output retarder. Drive on both road and rail is via the rubber road wheels, with rail guidance being provided through retractable guide wheels.

The vehicles' road and rail capability enables them to use the shortest or most convenient route to sections of rail which need servicing.

Similar road-rail capability has been built into RFW butt welders supplied to rail authorities in Australia and New Zealand, and into service vehicles operated by Metrail in Victoria.

The road-railers can move equally quickly in forward or reverse on rail, attaining up to 100km/h.

Another convenience feature of the through-loaders is their driver and passenger access through the front of the cab, saving operators having to climb over the wheels and the load to get in. The through-loaders, which are fitted with Hiab unloading and self-loading cranes, carry lengths of railway track up to 7.5m long. All three vehicles are air-conditioned, with the through-loaders having their air-conditioning units fitted within the roof, which was raised 150mm to accommodate them. The innovative mounting was developed as an alternative to exposed mounting on the roof, or mounting within the cabin, where there was not enough room with two men seated.

Both the through-loaders and the three-way tipper are scheduled to be in service by the end of this year.

For more information: Mr Chris Webb, Air Springs Supply Pty Ltd, 137 Bowden Street, Meadowbank, Sydney 2114. Telephone (02) 807 4077. Fax (02) 807 6979.

## NEW PRODUCTS & PROCESSES

### A mobile refrigerator

The Coolosan Mark II is a thermostatically controlled solid state mobile cooling unit which becomes an effective refrigerator when installed into an appropriate area and insulated with polyurethane.

Coupled to a 12 volt battery, Coolosan is able to produce a cooling effect powerful enough to compare with the most efficient mains-powered refrigerators, says Selna International Pty Ltd.

"The unit is inexpensive, easy to install and operate, requires no maintenance, is not affected by vibrations or heeling, and uses no gases or liquids," Selna director Torben Henriksen said.

Specifications are: Overall width 165mm, body diameter 129mm, weight less than 2.5kg. Coolosan remains environmentally friendly,



using no Freon/CFC gases and therefore creating no pollution.

The unit is priced at around \$920.

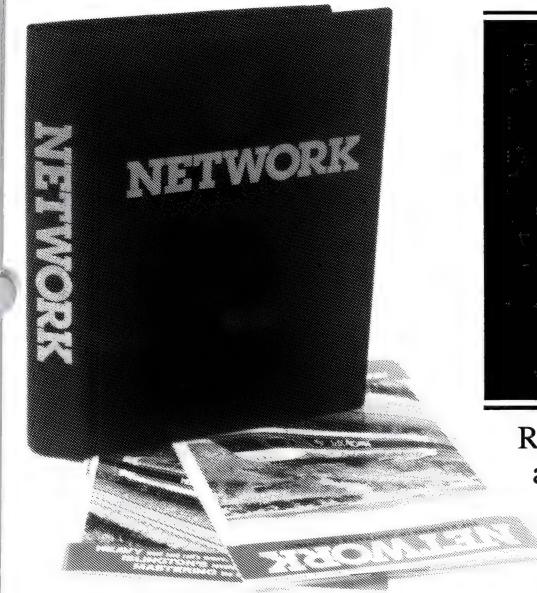
For further information: Selna International Pty Ltd  
1st Floor 300 Flinders Street  
Adelaide SA 5000  
Telephone (08) 2320100.  
Fax (08) 232 0103

### Lightweight cleaners

Two versions of a compact, lightweight high pressure water cleaner suitable for a range of professional cleaning applications are now being marketed by Stihl Pty Ltd with a full, all-States service and spare parts back-up.

They are the electrically-powered Stihl RE220K and the petrol engine-driven RB220K, both of which have high maximum operating pressures and highly-economical water delivery rates, yet weigh only 19.8kg for the electric model, and 29kg for the petrol-engined version.

A range of biodegradable cleaning agents is available for the cleaners. More from Stihl Pty Ltd, 2 Forbes Close, Knoxfield Victoria 3180. Telephone (03) 215 666. Fax (03) 763 4423.



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### Grime, grease and graffiti go quickly

By Ian Hammond

A new process called Accustrip, originally developed to clean the Statue of Liberty in the USA; and since refined as a general purpose degreasing, paint-removal process for industry, is being used to clean railway trains and buildings. It uses sodium bicarbonate and water, blasted at high pressure by compressed air and is non-toxic.

At recent demonstrations in Adelaide and Melbourne graffiti, grease, grime and brake dust were effectively removed from railway property.

So effective is the process that the exterior metal is restored to as-new finish, without the 'halo' often left around the edge of graffiti by solvents. However, Accustrip cannot be used on painted rolling stock, and can only be used to a very limited extent on fibreglass (GRP) panels.

The system is vehicle or trolley mounted and supported by a mobile air compressor or, in a permanent installation, by a suitable compressed air supply.

Because of the non-toxic and non-sparking qualities of the Accustrip

system, it is possible to perform depainting and degreasing maintenance in one step, in the field, in hazardous duty areas, without costly downtime.

Director of Accustrip Australia, Mr Les Avory said that a robotically controlled system was being developed to automatically remove graffiti as a train is driven through an 'arch' of Accustrip jets. Accustrip Australia, based in Adelaide, has the national distributorship for the technology which is marketed in the USA by Schmidt Manufacturing Inc.

### Automatic tagging options

An Australian company involved in the design and manufacture of automatic identification systems has launched a new patented radio frequency electronic identification (RFID) system which, it claims, is a technological breakthrough for low-cost RFID.

Integrated Silicon Design Pty Ltd of Adelaide says that its new range of electronic tagging systems can be read at a distance of up to 15m and at a tag-passing speed of up to 200km/h.

The company is offering a family of tagging systems for various

markets which will comply with the differing national regulations on the utilisation of radio waves, including both passive and active tags.

ISD's passive system consists of an interrogator and tags. The typical tag size for vehicle or container ID measures 60mm x 40mm x 5mm. The interrogator measures 330mm x 330mm x 130mm. During operation the interrogator transmits a low duty cycle pulse of RF power to energise the tag, when it enters the field of the interrogator's directive beam from its integral antenna.

The tag then replies with its uniquely modulated ID code that is subsequently decoded by the interrogator. The tags are not radio frequency transmitters but behave as RF field disturbance devices that uniquely modify the interrogation signal emitted by the reader.

More from: Integrated Silicon Design Pty Ltd, Level 1, 99 Frome Street, Adelaide 5000. Telephone (08) 223 5802. Fax (08) 232 3720.

### Cooling technology drive systems

The Behr parent company has announced formation of an independent subsidiary, Behr Industrietechnik GmbH & Co, to develop and produce heat exchangers and coolers for locomotives and other rail vehicles.

The product range includes cooling systems for water, oil and charge-air, oil coolers for transformers and rectifiers, hydrostatic fan and auxiliary machine drives, louvres, cooling systems for electronics, heating, ventilation and air conditioning systems.

The new company incorporates all the development groups and subsidiaries of the Behr parent company which have been dealing with problems of heat transmission in industrial service, and with the cooling of drives for rail vehicles.

With a total staff of 850 in the new company, around eight per cent are engaged in research and development. In addition, Behr Industrietechnik has access to all the research and development activities of the Behr parent company.

## REVIEWS

### Train Drivers' Stories

Edited by Mark Tronson, PH.D.

IFH Publishing Co. \$8.95



# Anecdotes from the footplate

Packed with tales that ring true as told by the engine drivers themselves, and interspersed with photographs of some of Australia's earlier steam engines, this is a highly entertaining book for the rail enthusiast.

It is tempting to suspect that some of the stories have been embellished with the imagination that belonged to men of the Australian bush, but the text tends to refute this.

Unlike the bush poets and the dreamers who could sit astride a horse while it wandered the wide open spaces of a young

continent, the engine drivers had to be all practical men, trained in engineering principles, and highly self-disciplined in their thoughts and actions. They could not afford the luxury of imagination.

Thus, the drivers have recalled incidents from their own personal experience without straying at all, it seems, from the straight and narrow, although some of their tales could well take their place alongside the best fiction. The sincerity with which they have been told, however, gives them an integrity which is indisputable.

Mark Tronson whose editing skillfully preserves much of the language and the natural

expression of the drivers actually names them in the book, but without associating individuals with particular stories.

He began work at the age of 16 years as a trainee engineman on the NSW Government Railways at Goulburn in 1968 and transferred to Port Kembla the following year. He studied at Wollongong University part time while a train driver.

*Train Drivers' Stories*, edited by Mark Tronson, PH.D, is published by IFH Publishing Co, 3 Shelly Road, Wallacia NSW 2750. ISBN 1 875423 001.

# New edition of Jane's World Railways

In the foreword of *Jane's World Railways — 1991* editor, Geoffrey Freeman Allen, reports the reaffirmation of French President Francois Mitterrand, at the inauguration of the Paris-Clermont Ferrand electrification, in the "advance of the railway," "the advancement of great infrastructures" and "in the capacity of the public sector to achieve them in a combination of economic efficiency with social progress."

Then, says the editor: "At the other extreme is Britain."

We take issue with Jane's editor in this regard and suggest — at the other extreme is, perhaps, Burkina Faso. And what, may you ask, is Burkina Faso? It's railway too features in Jane's *World Railways* — just 495 km of 1000 mm gauge line in a tiny country near the Ivory Coast.

And what about the LRV's of Krivoy Rog in the USSR?

The point is, railway infrastructure and developments in Burkina Faso and Krivoy Rog are detailed in Jane's as well as the world's finest railway systems. Now in its 32nd edition, where else could you find this data? Basically Jane's covers almost 1300 manufacturers, 400 railway systems, and 160 rapid transit networks in 110 countries.

Details are given for 18 types of equipment and their manufacturers, analysis of high-speed rail developments, reams of statistical data and plans for modernisation and expansion on an international basis.

Australia's Railway Systems comprise 20 pages which includes all government railways and private railways in the Pilbara. The coverage given to Australian

Railway Systems is comprehensive — though some of the illustrations are dated and little new visual material is published. The most interesting graphic is an artist's impression of State Rail's new intercity emu double-decker cars being built by Comeng. The most comprehensive cover is given to Queensland Railways, although the extensive staff restructuring announced in late November 1990 means the personnel list demands a re-write. These changes were effected long after Jane's deadlines.

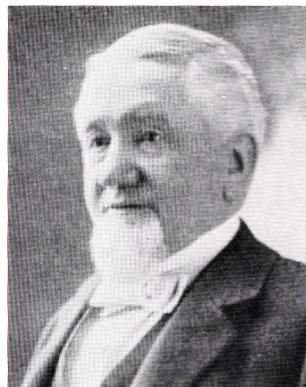
*Jane's World Railways 1990-91* £115/US\$195. Edited by Geoffrey Freeman Allen. Published by Jane's Transport Data, a division of Jane's Information Group Limited, 163 Brighton Road, Coulsdon, Surrey, CR5 2NH, United Kingdom. ISBN 0710609205.

## REVIEWS

### Pullman Travelling in Style

by Brian Haresnape

Ian Allan Ltd,  
Shepperton, UK. \$60



*George Mortimer Pullman exemplifies the style which made him world famous as the creator of luxury train travel.*

# The advent of train luxury

**T**he luxurious award-winning comfort of The Ghan from Adelaide to Alice Springs coupled with plans to upgrade the Indian Pacific to at least a similar standard indicate a resurgence of Australian interest in providing rail services for the top end of the international tourist markets.

This book, therefore, is of topical interest because it describes how George Mortimer Pullman, an American, created world leadership in luxury train travel in the mid 1800s and gave his name to rail cars world-wide which met contemporary expectations in art, style and service.

Brian Haresnape, a well-known English railway author now deceased, naturally concentrates on the introduction of the first Pullman car to England on 1 June 1874 tracing its history through the British railway system. He makes the point that George Pullman, the man, and the rail car which carried his name world-wide, were synonymous with luxury. Pullman represented a whole attitude to life for rail travellers during a period in history when rail was the only really socially-acceptable way for tourists to travel.

There was then, and undoubtedly still is, a very good market for comfort, style and service on longer rail journeys.

The author follows the fascinating history of the British Pullman Car Company, with operations over the years being

adapted to suit changing public demand, the formation of Britain's big four railway companies in 1923, the nationalisation of the railways in 1948 and the later decline in importance of the British rail network.

This is an A-4 size hard-cover book which is well illustrated with photographs, sketches and drawings showing trains and their luxurious interiors through the years. The first four chapters discuss the evolution of rail luxury through the story of George Pullman and his operations in America. From then on the book delves deeply into the impact of the Pullman car on British rail travel. The Pullman concept was to provide a hotel on wheels, and the operational and financial problems which were encountered in doing this are well documented.

The long journey times of several days on American railroads with no effective competition provided a ready market for Pullman's new and superior designs of sleeping and restaurant cars. This grand scale of American rolling stock, of course, could not be brought across the Atlantic to support the European interpretation of the original Pullman concept.

British railway companies of the day with inherent gauge restrictions and much shorter journey times could offer only a somewhat condensed version of the American Pullman experience.

The decade 1960-70 in Britain saw a steady running down of rail operations, leading to the virtual disappearance of the famous Pullman name, in an age which seemed no longer to value what had for so long represented the ultimate in rail travel.

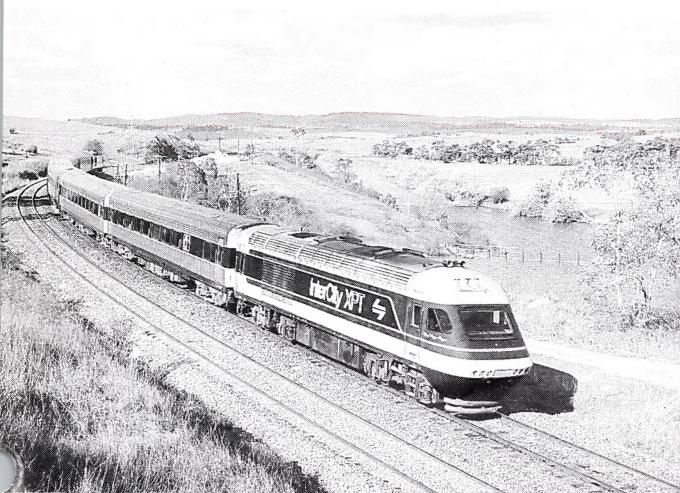
Interestingly, the subsequent decline of the service was due to economic and operating constraints rather than to any rejection of the concept on the part of passengers, and it has since made a strong revival.

In the 1980s British Pullman services took on a new lease of life with the relaunch of British Rail Pullman operations, and the much-publicised return of traditional Pullman elegance and service in the form of the Venice Simplon - Orient Express, as well as the main line Pullman rail excursions and the excellent Pullman cars on a number of preserved railways.

Brian Haresnape, just prior to his death a few years ago, considered that British Rail's InterCity Pullman services hold great promise for the future as new generations of people discovered for themselves the unique character of Pullman travel - travelling in style. The same observation no doubt holds true of the high-rating Australian rail services today.

*Pullman Travelling in Style* (review copy from Lothian Books, Melbourne) is readily available from most major book sellers. ISBN 0 7110 1648 8.

# Want to know more about Australian Railways?



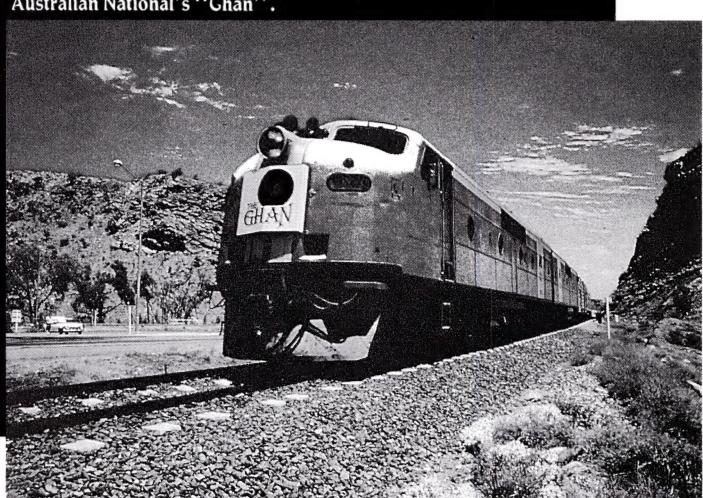
The XPT (Express Passenger Train) just south of Goulburn, N.S.W.



The "Spirit of Capricorn" — Brisbane to Rockhampton.



V/Line Ballast Train at Kilmore East.



Australian National's "Ghan".

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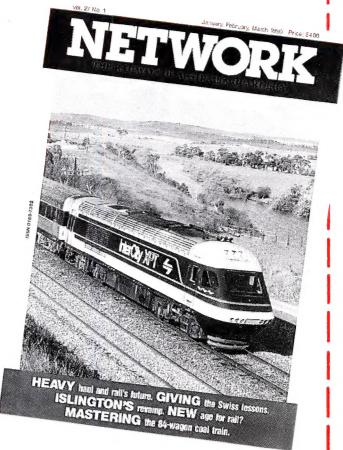
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